

Milk River Watershed Hydrologic Analysis

Volume 1 - Tributaries and Water Bodies

Valley, Hill, Blaine, and Phillips Counties, MT

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Milk River Watershed Hydrologic Analysis: Volume 1

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1. Executive Summary

Hydrologic analyses have been performed on ungaged tributaries to the Milk River and on closed basins and reservoirs within the Milk River watershed. These hydrologic analyses will support future hydraulic analyses that will lead to updated floodplain mapping and development of other flood risk products to revise flood risk information to the communities within the Milk River watershed in Valley, Phillips, Blaine, and Hill Counties, Montana (**Figure 1**). A separate study will supplement this hydrologic analysis and will include flood-frequency analyses of select stream gages on the mainstem Milk River and gaged tributaries to the Milk River.

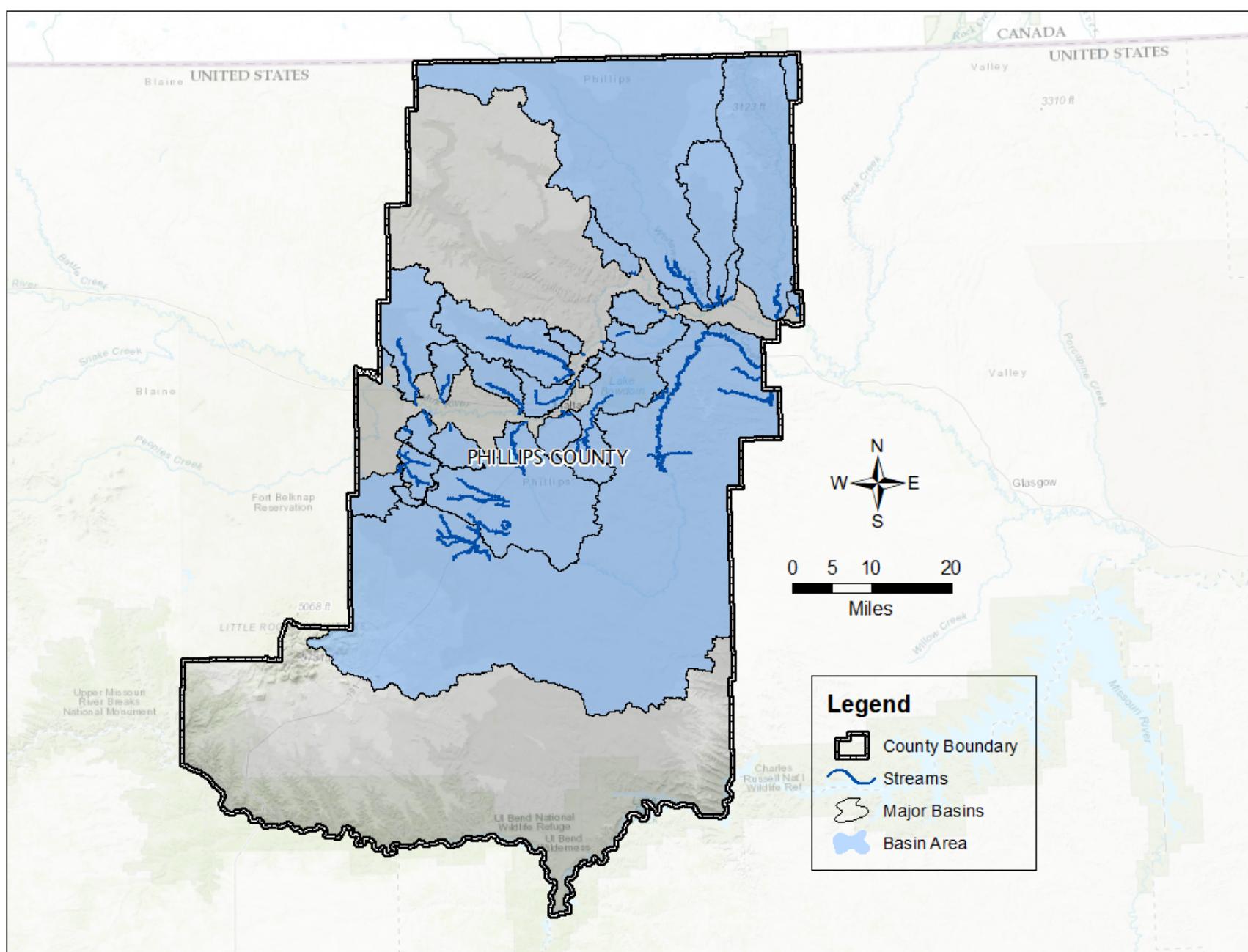
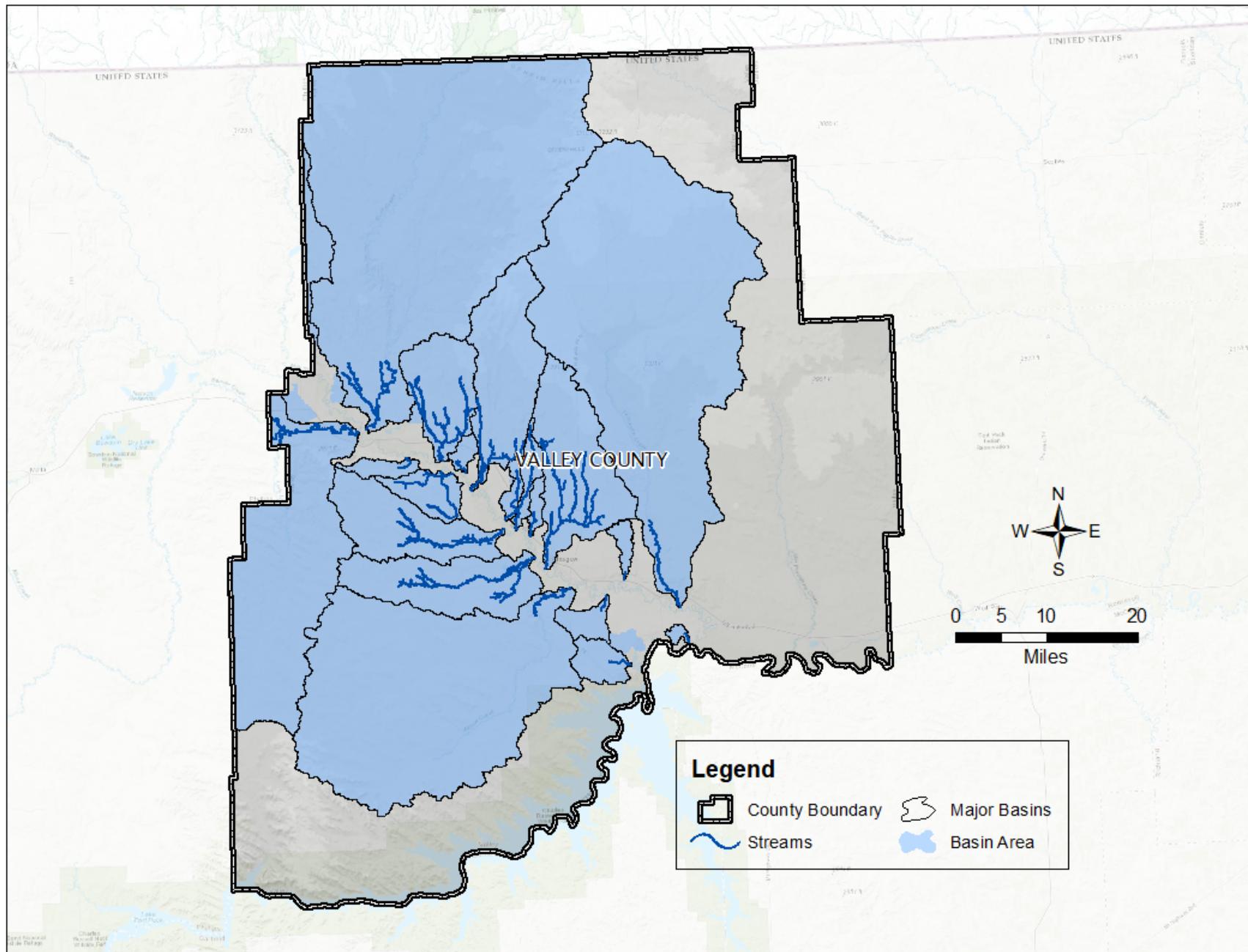
The hydrologic analyses were performed to establish peak discharges for the 10%, 4%, 2%, 1% and 0.2% Annual Exceedance Probability flood events. Additionally, peak discharges were determined for a standard error of prediction above the 1% Annual Exceedance Probability event to demonstrate a level of uncertainty in the computed discharge values, and, ultimately, the calculated flood elevations. For FEMA-based flood risk products, this discharge value above the 1% Annual Exceedance Probability is known as the 1% Plus discharge. Peak discharges were determined on approximately 900 tributaries within the watershed. Intermediate flow change locations were identified on the tributaries based on watershed characteristics to account for the features within the watershed that result in the changes in flow as the river flows downstream through the watershed. The flow nodes were located at significant tributaries and other substantial increases in drainage area which can account for flow increases along the river. These additional flow change locations (flow nodes) within the tributaries resulted in approximately 2,000 pour points along the tributaries within the watershed. Analyses were performed on an additional 284 locations identified as closed basins or reservoirs to establish the contributing runoff volume at these locations.

The USGS water resources web application, StreamStats, was utilized to determine the peak discharge values based on regional regression equations for each of the tributaries included in the analysis. StreamStats applies regional regression equations for a location of interest based on the Hydrologic Region and basin characteristics of the location. Most of the tributaries included in the hydrologic analysis are located within the Northeast Plains Hydrologic Region, although some are also located in the Northwest Foothills Hydrologic Region and the East-Central Plains Hydrologic Region. The flow locations of interest were input to StreamStats via the batch process tool within StreamStats. A quality check was performed on the StreamStats output using basin characteristics derived from Digital Elevation Models developed from recently collected high-resolution LiDAR data. Discrepancies between StreamStats and LiDAR derived output were manually reviewed and the StreamStats results were adjusted as required to correct any StreamStats processed discrepancies.

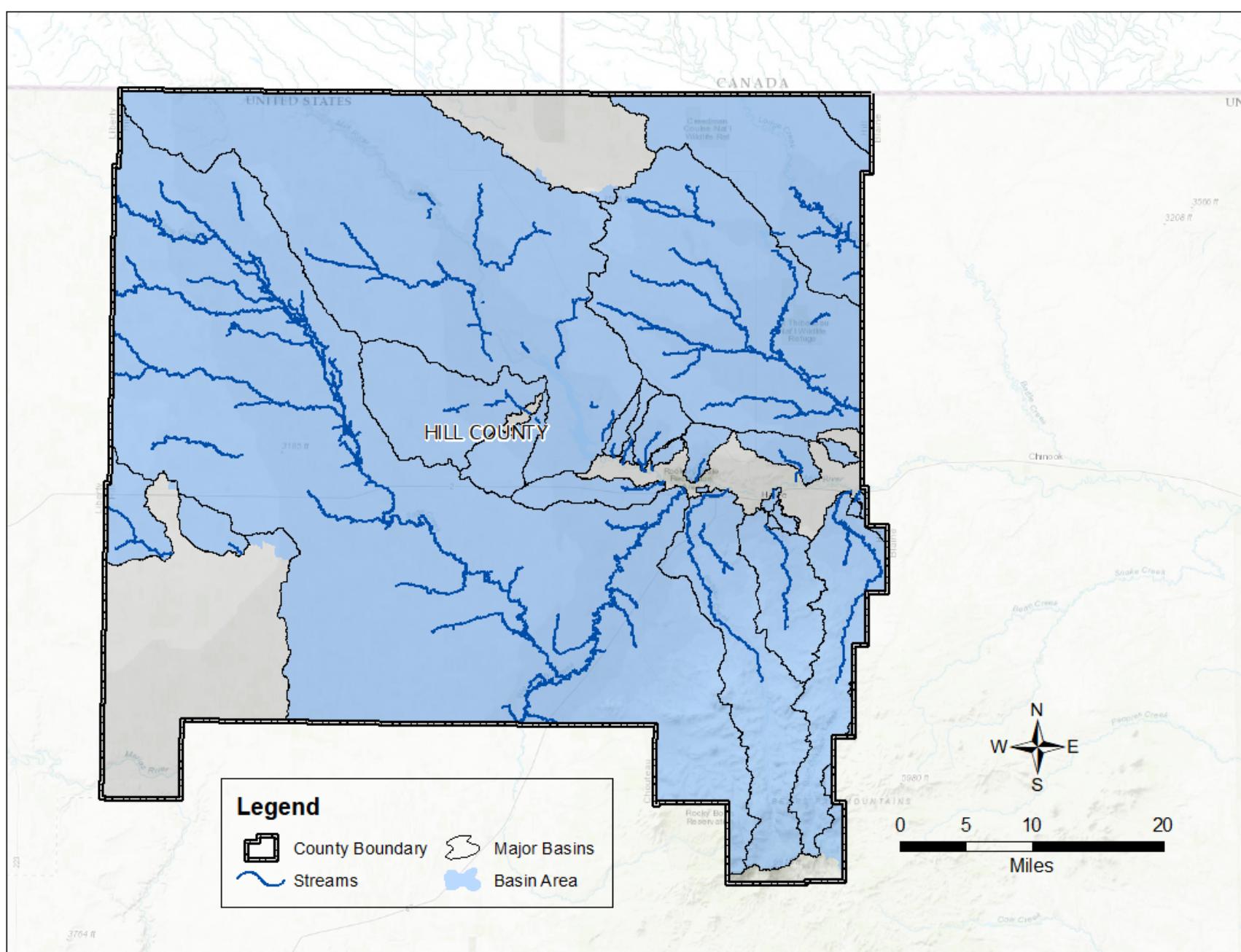
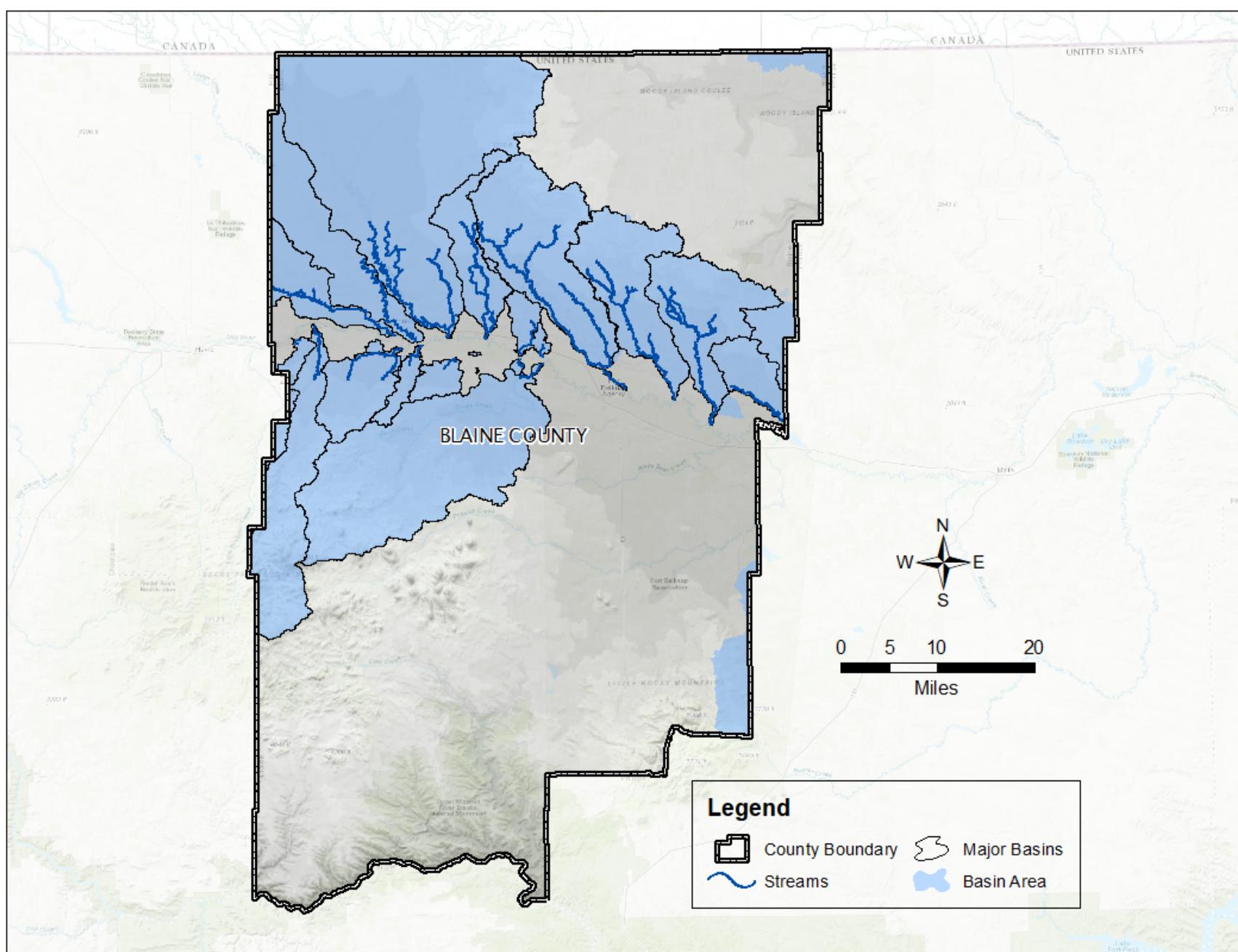
The resulting flow values for the ungaged tributaries and closed basins and reservoirs are provided in summary information prepared as part of this study. The flow values were determined using methods that meet FEMA guidance and standards and are considered to be reliable for use in future flood risk products.

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Figure 1: Milk River Watershed Hydrologic Study Area



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2. Introduction

Under contract to the State of Montana's Department of Natural Resources and Conservation (DNRC), Michael Baker International (Baker) has been tasked with preparing a Hydrologic Analysis Report for the Milk River and tributaries within Valley, Phillips, Blaine, and Hill Counties, Montana (**Figure 1**). The purpose of the hydrologic analyses is to provide new and updated hydrologic information that will be subsequently used in floodplain mapping activities within the Milk River watershed. The State of Montana is a Cooperating Technical Partner (CTP) with the US Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), and this work is performed under Mapping Activity Statement (MAS) Number 2019-01, Milk River Watershed, Phase I.

This hydrologic analyses for the Milk River watershed includes ungaged tributaries and other water bodies (closed basins, lakes, ponds, reservoirs, etc.) that are part of the four county study area (**Figure 1**). Hydrologic analyses for the ungaged tributaries to the Milk River were performed by utilizing regional regression equations. Hydrologic analyses for water bodies were performed following procedures described in Recommendations for the Treatment of Reservoirs and Closed Basin Lakes for Flood Studies in Montana, Version 1.0 (Michael Baker International, 2019).

2.1. Background Information and Existing Flood Hazards

As a participant in FEMA's CTP program, The State of Montana works in collaboration with FEMA to identify flood hazards and communicate flood risk to communities throughout the state, and to assist with administration of the National Flood Insurance Program (NFIP). In this role, the State also engages with communities to provide technical and community outreach resources related to implementation of the NFIP, the Montana Floodplain and Floodway Management Act (1971), and the Montana Code Annotated. Annually, the State identifies and prioritizes specific study and mapping projects and applies to FEMA for funding to implement these projects and other related program activities. The hydrologic evaluation of the Milk River and tributaries is one element of a project identified and prioritized for the Milk River Watershed Phase I study. The ultimate goal of the study is to provide new and updated flood hazard risk information to the communities within the Milk River watershed.

Existing flood hazard information within the Milk River watershed is dated and quite limited given the broad extent and considerable flood risk posed by the Milk River and tributaries; however some locations within the watershed do have more recent and more detailed flood risk information. Flood hazard information has been published by FEMA on a Flood Insurance Rate Map (FIRM) for Valley, Phillips, Blaine, and Hill Counties. With the exception of a few tributaries, the tributaries within the four-county study area are currently mapped as Zone A on the FIRMs.

2.2. Basin Description

The Milk River Basin is situated along the Northern border of Montana and spans approximately 729 miles along its general east-to-west orientation. Its headwaters originate high in the northern Rocky Mountains near Glacier National Park within the Blackfeet Indian Reservation. The Milk River basin is

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unique in that it is the only basin in the country that originates within the United States, leaves the country flowing north into Canada for nearly 200 miles, re-enters the United States at its Eastern border crossing, and joins the Missouri River on its way to the Gulf of Mexico. The Milk River Basin accepts water from the adjacent St. Mary's Basin via a trans-basin diversion known as the Milk River Project, which was installed in 1905 to provide additional stream flow for irrigation of approximately 140,000 acres in the Milk River Basin, mostly within Valley, Phillips, Blaine, and Hill Counties. The river is often referred to as "the life-line of the hi-line" as it is a critical component to the agriculture, with numerous diversion dams providing much needed irrigation on the northern Montana prairie. The geology of the region consists of unconsolidated alluvium, glacial till, glacial lake deposits, and outwash deposits, mainly silt, sand, and gravel.

"Lewis and Clark mention the Milk River in their journals. It was one of the landmarks the Hidatsa Indians had told them to look for on their way west. The Indians called the Milk "the River that scolds all others". On May 8, 1805, Meriwether Lewis noted "...the water of this river possessed a peculiar whiteness, being about the colour of a cup of tea with the admixture of a tabelspoolfull of milk. From the colour of its water we called it Milk River. We think it possible that this may be the river called by the Minitares (Hidatsa) 'the river that scolds at all others'" (Milk River International Alliance, 1999).

A majority of the Milk River Watershed lies within the Northeast Plains Hydrologic Region, although a small portion of the Milk River watershed and tributaries included in this analysis extend into the Northwest Foothills Hydrologic Region, and some of the lower reaches are located in the East-Central Plains Hydrologic Region. This region is generally described as rolling prairie. Floods on larger streams in this region are caused by prairie snowmelt or snowmelt mixed with rain. Thunderstorms are more prevalent in eastern Montana than in western Montana, and thunderstorms are highly variable in terms of extent, location, and precipitation amounts and intensities. Most floods on smaller streams are caused by thunderstorms. Annual peak discharges are more variable than those from streams in the Northwest Foothills region (USGS 1998).

The snowmelt runoff is affected by several mechanisms including air temperature during the spring breakup season, with baseline conditions influenced by the level of saturation of the contributing watersheds prior to fall freeze up, as well as the duration of sustained cold winter weather.

In general, the snowmelt runoff in a watershed begins in the lower, warmer elevations (near the mouth of the system) and progresses to the higher elevations in the basin. Following that pattern, the Milk River would begin to melt first in the eastern portion of the basin, near the communities of Nashua and Glasgow, with melting continuing towards the west and higher elevations. This system is somewhat unique in that the chinook winds that can occur on the eastern slopes of the Rocky Mountains, cause warm air to begin the melting processes in the upper, western portions of the watershed. This drives the breakup processes from west to east.

During years with chinook influence, as snowmelt begins to flow from the west towards the still frozen eastern plains, the runoff can encounter portions of the river with intact channel ice. The energy of the runoff can breakup and lift channel ice, transporting it downstream to a location with

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limited conveyance capacity, causing an ice jam with resultant upstream backwater and flooding. Ice jams can also occur without the influence of a chinook winds driven melt.

The Fresno Dam, located 15 miles upstream of Havre, has regulated peak flows on the Milk River since its completion in 1939. However, the contributing drainage area at the Fresno Reservoir is 3,766 square miles, and the effect of regulation is reduced as the Milk River flows toward the east and intercepts large unregulated tributaries (FEMA, 2006). The routing effects of the reservoir can be observed in the discharge of some of the larger storms on record. **Table 1** presents the inflow and outflow for some of the larger storms. (FEMA, 2006, 1988)

Table 1. Fresno Reservoir Inflow and Outflow Rates for Storms of Record

Year	Inflow (cfs)	Outflow (cfs)
1952	19,500	6,140
1965	11,594	3,689
1978	10,338	2,325

Ample stream gages exist throughout the basin and especially along the Milk River and its tributaries in Valley, Phillips, Blaine, and Hill counties. Effective flood hazard mapping data exists in both digital (FEMA NFHL) and paper formats throughout the basin, and certain areas remain unmapped.

Population throughout the four counties listed above is concentrated along the Milk River, in the Fort Belknap Reservation, and in small towns that dot the watershed.

The National Inventory of Dams (NID), compiled by the USACE, shows a significant amount of impoundment occurring throughout the lower Milk River Basin. There are over 600 features classified as dams in the Milk River Basin according to NID, 14 of which are classified as high hazard.

Much of the land use adjacent to the Milk River floodplain and its tributaries is classified as agricultural (farming and ranching). While many small farming communities are present along the entire length of Milk River, the setting is almost entirely rural, with Havre having the highest population (nearly 10,000) followed by Glasgow (just over 3,300), and Malta (approximately 1,900). These are the largest communities within Valley, Phillips, Blaine, and Hill County study area. The study area includes portions of the Fort Peck Indian Reservation in Western Valley County and Fort Belknap Indian Community in Blaine and Phillips Counties. US Highway 2 is the main east-west thoroughfare, locally referred to as the Hi-Line, and generally follows the Milk River flowpath. In addition to Highway 2, there are numerous county roads, city streets, private drives, farm/ranch accesses, and the Burlington Northern and Santa Fe Railway with bridges that cross the Milk River and tributaries.

Numerous irrigation systems divert water from the Milk River and tributaries, but these are relatively minor diversions and generally deliver water to farms and ranches within, or very near, the Milk River or tributary floodplain. Fresno Reservoir is a major irrigation storage reservoir on the Milk River upstream of Havre that also provides significant flood storage for the Milk River. Other significant

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storage reservoirs on the Milk River and tributaries include Dodson Dam near the community of Dodson in Phillips County and Frenchman Dam on Frenchman Creek near the town of Saco in Phillips County, MT. As noted above, much of the land along the Milk River and its tributaries is in private ownership; primarily as farms, ranches, and the businesses and residents of the communities along the rivers. Throughout the remainder of the watershed, however, most of the land ownership is public land - managed primarily by the Fort Peck Indian Reservation, Fort Belknap Indian Community, US Bureau of Land Management, and the State of Montana.

The Milk River watershed elevation ranges from 2,031 feet above MSL at the confluence with the Missouri River to over 8,700 feet in the watershed's mountain peaks in Glacier National Park. The mean basin elevation is 3,000 feet, and only approximately 1% of the basin is at an elevation above 5,000 ft. Only about 1% of the watershed is forested. Based on data collected using USGS StreamStats (McCarthy et al. 2016), mean annual precipitation averaged across the watershed is 13.5 inches per year. Temperatures vary widely across the watershed as well, with wintertime low temperatures frequently dropping well below zero degrees Fahrenheit, and summertime high temperatures average more than 80°F in the watershed's lower elevations.

2.3. Flood History

2.3.1. Milk River

Historical accounts of flooding in the Milk River basin date back to the late 1800s. Based on a 1932 congressional report, 72 floods occurred during the span from 1880 to 1931 (FEMA, 2006). Many were reported to be the result of rapid spring snowmelt, with some additional peak flows resulting from heavy intense rainfall between May and September and some instances of rain combined with snowmelt during March and April. Ice jams that form during the spring runoff can increase the severity of the localized flooding by increasing stage. A separate report details the location, occurrence and magnitude of ice jams in the Milk River valley (Baker, 2020).

2.3.1.1 Anecdotal Information

There are numerous anecdotal accounts of flooding, many of which are available in historic newspaper articles. The earliest known flood in the valley occurred prior to 1880, before the valley was settled or the railroad was built. Many of the newspaper articles focus on flooding in Glasgow, prior to the construction of the levee constructed in 1911 to protect the city from flood waters. Additional information is summarized in county and state documents.

The following accounts pertaining to the Milk River have been summarized from the existing Phillips, Blaine and Hill Flood Insurance Studies (FEMA, 1986, 1988, 2006).

Pre-1900: The first great flood known to have occurred in the Milk River basin was in 1880, before the valley was settled and before the Great Northern Railroad had been built. Another great flood occurred in March 1888, due to melting snow. At the time, the Great Northern Railroad was the only transportation route through northern Montana. The GNRR suffered much damage to culverts and bridges, thus limiting the railway transportation. In April 1899, another great flood caused by rapid snowmelt occurred. Little engineering data are available on these three historic floods since observations of stage were not preserved.

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1906: The first flood for which factual data are available occurred in June 1906, as a result of rains that had started in mid-May. During a 3-week period, an average of 5 inches of rain fell on the basin. On June 6, an intense storm began in the vicinity of Highwood. Moving northeasterly, the storm centered over a small area near Warrick, in the Bear Paw Mountains dropping 8.26 inches of rainfall on June 7. The storm is the greatest of record in the Milk River valley. The valley was flooded from Havre to the mouth of the river. Gaging stations existed on the South Fork Milk River at the international boundary, Milk River at Havre, and Milk River at Malta.

1907: Serious floods occurred in early April 1907. A discharge of 11,200 cfs was recorded at Malta on April 6, the third highest to date. The 1907 flood was the result of snowmelt.

1908: Phenomenal rains west of Havre produced high flows in June 1908 on the Milk River above Havre. A flow of 15,000 cfs was estimated for the South Fork of the Milk River near the Canadian boundary, with a drainage area of only 288 square miles. Extremely high floods occurred in the Marias and adjacent basins west of the Milk River drainage basin during the 1908 storm.

1912: During April 1912, a great flood occurred when warm weather melted snow which had been saturated by heavy fall rains. Rainfall accompanied the flood, amounting to slightly more than 1 inch in 3 days. Except for April rainfall, the 1912 flood appears to have been produced by conditions like those existing in 1952

1917: April 1917 produced a major flood from Eastern Crossing to the mouth, as a result of rapid snowmelt. Record flows, which were not exceeded until 1952 were established at the Milk River at Hinsdale. Near maximum flows also occurred on the Milk River at Havre and Malta.

1918: A major snowmelt flood occurred in March 1918. Peak discharges, which were only exceeded in 1952, occurred on the Milk River at Havre and Malta.

1923: A destructive flood in the lower Milk River valley occurred in June 1923 as a result of a 9-day storm during June 15-23. Slow, steady rain fell over the entire basin during the first days of the storm, followed by heavy, intense rainstorms along the main river valley. The storm path progressed downstream and although the total average rainfall was less than 4 inches, exceptionally high runoff rates occurred during the intense part of the storm due to saturation of the soil during the early storm period and concentration of peak flows caused by the direction the storm traveled. Flood conditions prevailed throughout the basin, although no record flows were established.

1927: A severe rainstorm occurred in May 1927, starting on May 17, and continuing with major precipitation on May 28 and 29. The storm produced an average of 5 inches over the Milk River Basin. Flood conditions were produced from Eastern Crossing to the mouth. This rain flood followed about a month of severe snowmelt floods.

1938: A cloudburst-type storm centered over the Bear Paw Mountains on June 22, 1938, producing over 5 inches of rainfall. Havre recorded 1.20 inches in 30 minutes. Nine persons lost their lives.

1952: The floods of April 1952 in the Milk River basin were caused by a combination of meteorological factors that were favorable for above-normal runoff in a short time. The soil cover was impervious at

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the time of the flood as a result of the cold, wet autumn of 1951 and a February thaw that placed an ice layer on the frozen topsoil, which remained impervious until the spring snowmelt was complete. Snow accumulated in above-normal amounts throughout the basin during the winter. The rapid rise in temperature coupled with warm chinook winds from late March into April produced snowmelt that resulted in record peak discharges at all gaging stations on the Milk River from Havre to the mouth. The peak discharge at Malta during this event was 24,000 cfs. The flood in the Milk River basin occurred in two surges: the first brought early flooding at Havre and other cities along the Milk River; the second represented the arrival of floodwaters from the most distant drainages in Canada, Battle Creek and Frenchman River. Progress of the Milk River mainstream flood was slow in comparison to most Montana floods.

Transportation in the Milk River valley was possible only by rail or by boat during the flood crest. The Great Northern Railroad was not overtapped in any place along the main line through the Milk River valley and at many cities and towns the railroad embankment served as part of the protective dike system.



Photo 1. Milk River flooding near Glasgow, April 17, 1952 (Glasgow Courier, 1952)

1953: Water supply paper 1320-B indicates that for the second consecutive year the Milk River flooded. Flooding north of Havre occurred on June 6, 1953, as dikes along the Milk River broke and floodwater backed up from downstream.

1978: Above average temperatures in the 60° F range in early April released a heavy snowpack in the Milk River basin, which contributed to a major flood problem. Flooding between Malta and the mouth of the Milk River persisted for over a week as residents from Dodson to Malta were evacuated from their homes. Peak flows during this flood reached stages close to those experienced in the 1952 flood although discharges were considerably less.

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The following information is derived from the Draft 2018 Multi Hazard Mitigation Plan for Blaine County.

1986: In 1986, a 500-year+ flood occurred, damaging over half of the homes in Harlem. The Fort Belknap Indian Reservation experienced flooding in the past along stretches of the Milk River, including a bad year in the early 1990s.

2011: Rising stream and river levels led to lowland flooding and road and other infrastructure damage. Fort Belknap Indian Reservation experienced flooding in its northeastern portion. Families were displaced several times by rising water. A storm also caused flooding in Hays and Lodge Pole and rising levels of the Milk River displaced several more families who live in the river valley near the Fort Belknap Agency. The NWS Milk River near Glasgow gage peaked at 34.08 ft on June 11, the highest crest on record, 3.08 ft above major flood stage.

2013: Two weeks of rain dropped between what would normally be half - or more - of the total amount of rain that falls in a year. The flooding was a flashback to 2011, when rain and melting snow drenched the area, leading to local, state and federal disaster declarations, and 2010, when the flooding also led to presidential disaster declarations for Hill County. Roads, culverts, bridges, water systems and government buildings all were damaged in the flooding.

April 2018: Flooding resulted in a state of emergency declaration Blaine and Hill counties and the Fort Belknap Indian Reservation. Water released from Fresno Reservoir gushed into the Milk River as more water ran over the spillway at the dam. Melting snow filled the dam and flooded the region, damaging roads and inundating fields.



Photo 2. Milk River flowed over highways heading south out of Chinook, April 25, 2018 (Blaine County Journal, 2018)

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2019: Flooding of the Milk River resulted from snowmelt coupled with additional snowfall and rain resulted in the Milk River reaching a major flood stage.

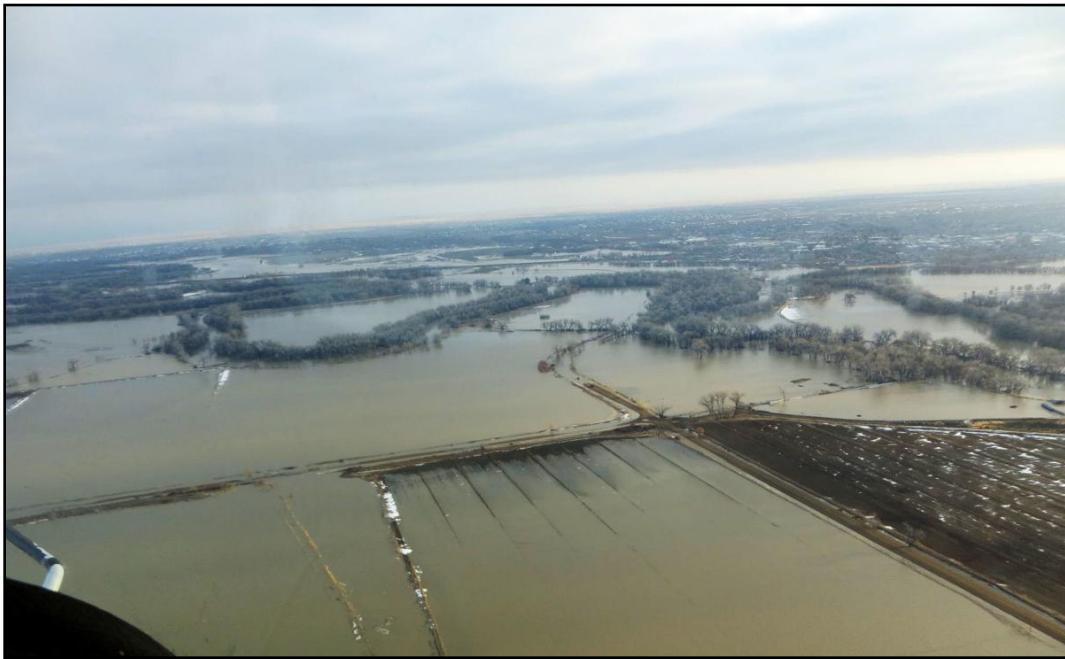


Photo 3. Aerial view of Milk River flooding near Glasgow, March 27, 2019 (Billings Gazette, 2019)

2.3.1.2 Recorded Data

Numerous USGS gaging stations exist along the Milk River corridor. A detailed study of the gages is currently being conducted by members of the Montana USGS. The results of that analysis will be presented in Volume 2 of this report. The largest recorded discharge events for six of the gages representing the span of the river from below the Fresno Reservoir (Milk River at Havre) to the confluence with the Missouri River (Milk River at Nashua) are presented in **Table 2**.

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Table 2. Peak flow data for select gages on the Milk River

Milk River						
Station Name	Milk River at Havre		Milk River near Harlem		Milk River near Dodson	
Station Number	06140500		06154100		06155030	
Period of Peak Flow Data	1900-2018		1939-2018		1953-2018	
Number of Peak Flow Records	66		48		41	
Largest Recorded Events	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
	4/3/1952	11,400.	Historic	19,000.	9/26/1986	13,200.
	4/19/2018	8,230.	9/29/1986	13,900.	4/23/2018	10,700.
	3/31/1978	7,840.	Historic	9,800.	--	9,130.
	3/7/1994	7,600.	4/22/2018	8,970.	5/23/2011	8,550.
	6/6/1953	6,900.	4/19/1965	6,600.	6/5/2013	8,540.
Milk River						
Station Name	Milk River near Malta		Milk River at Tampico		Milk River near Harlem	
Station Number	06155500		06172310		06174500	
Period of Peak Flow Data	1903-2018		1953-2018		1899-2018	
Number of Peak Flow Records	25		67		79	
Largest Recorded Events	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
	4/11/1952	24,000.	4/17/1952	45,000.	4/18/1952	45,300.
	9/26/1986	14,800.	4/1/1925	27,200.	6/9/2011	26,500.
	3/26/1918	11,500.	4/11/1917	25,200.	4/5/1978	18,900.
	4/10/1907	11,400.	3/28/1918	24,900.	3/8/1986	18,500.
	6/9/1906	11,200.	3/25/1939	21,100.	4/2/1943	17,400.

2.3.2. Milk River Tributaries

The tributaries of the Milk River vary in size, orientation, soil composition, land use and elevation. The predominant flood drivers for the contributing basins are not always coincidental with those of the Milk River or even other tributaries. The tributaries located further west in the system are more

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prone to flooding due to spring snowmelt, while the tributaries in the eastern portion of the system can experience floods due to thunderstorm bursts and heavy summer rains.

For example, the South Fork Spring Coulee near Havre, has 17 out of 18 peak flows that occurred between January and March, while Porcupine Creek near Nashua has 6 out of 15 peak flows that occurred between late June and late August. The following sections describe floods that have occurred based on anecdotal accounts and those documented by recorded peak flow data.

2.3.2.1 Anecdotal Data

Flooding of the numerous tributaries in the Milk River valley is not as extensively documented as the main channel, primarily due to the less dense population that lives along the smaller streams. However, information is available in the existing Phillips, Blaine and Hill Flood Insurance Studies, through State and Federal Disaster Emergency databases, and current and historical news articles as summarized below.

1906: The first flood for which factual data are available occurred in June 1906, as a result of rains that had started in mid-May. Gaging stations existed on Battle Creek near Chinook, Beaver Creek near Saco and Rock Creek near Hinsdale. Peak flows, which until 1952 had not been exceeded, were established for the latter two stations.

On several small tributaries phenomenal discharges were estimated, notably 8,600 cfs from 16 mi² on Lenoir Coulee south of Malta, 1,700 cfs from 25 mi² on Second Creek in the same vicinity, 1,606 cfs from 40 mi² on Fifteenmile Creek near Chinook, 1,750 cfs from 26 mi² on Threemile Creek near Chinook, and 2,750 cfs from 20 mi² on Wayne Creek near Harlem.

1912: During April 1912, a great flood occurred when warm weather melted snow which had been saturated by heavy fall rains. Rainfall accompanied the flood, amounting to slightly more than 1 inch in 3 days. Except for April rainfall, the 1912 flood appears to have been produced by conditions like those existing in 1952. Lodge Creek at the international boundary had a maximum discharge of 5,700 cfs which was 18 percent above the 1952 peak. The 1912 flood peak on Rock Creek near Hinsdale reached 10,000 cfs and was exceeded only by 18,000 cfs in 1906 and 12,900 cfs in 1952.

1917: April 1917 produced a major flood from Eastern Crossing to the mouth, as a result of rapid snowmelt. Record flows, which were not exceeded until 1952 were established for Battle Creek at the international boundary, Beaver Creek near Malta, and Frenchman Creek above East End.

1918: A major snowmelt flood occurred in March 1918. The peak discharge, which was only exceeded in 1952, occurred on Big Sandy Creek near Laredo. Battle Creek near Chinook had a discharge of 12,000 cfs, which has never been exceeded.

1923: A destructive flood in the lower Milk River valley occurred in June 1923 as a result of a 9-day storm during June 15-23. Flood conditions prevailed throughout the basin, although no record flows were established.

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1925: During March 1925, rapid snowmelt produced severe flooding on Frenchman and Rock Creeks with unusually high water in Battle Creek, Lodge Creek, and other northern tributaries. The highest discharge recorded prior to 1952 occurred on Rock Creek below Horse Creek at the international boundary.

1938: A cloudburst-type storm centered over the Bear Paw Mountains on June 22, 1938, producing over 5 inches of rainfall. Havre recorded 1.20 inches in 30 minutes. Devastating floods were produced on Bull Hook Creek, and on Gravelly Coulee, 23 miles southwest of Havre. Nine persons lost their lives.

1943: A severe snowmelt flood occurred in March 1942, producing record peaks on generally the same tributaries which flooded in 1925. The peak discharge on Lodge Creek below McRae Coulee of 6,090 cfs exceeded the 1952 peak by 10 percent. Maximum discharges were observed on Frenchman Creek at Morrisons and below Val Marie and on Whitewater Creek at the international boundary. None of these flows were exceeded until 1952.

1952: During the floods of April 1952 nearly every tributary experienced a record peak flow of values close to the maximum. The flood in the Milk River basin occurred in two surges: the first brought early flooding at Havre and other cities along the Milk River; the second represented the arrival of floodwaters from the most distant drainages in Canada, Battle Creek and Frenchman Creek.

Thirtymile Creek caused most of the flooding at Harlem, although the Milk River was backed up nearly to town. Flooding at Dodson resulted from backwater from the Milk River and overflow from Dodson Creek.

Frenchman Dam on Frenchman Creek failed at approximately 5:00 pm on April 15, 1952 followed by the washout of the spillway structure the following day. The failure of the dam coupled with inflow from Rock Creek and other tributaries created the flood of record on the Milk River at Glasgow on April 18, 1952.

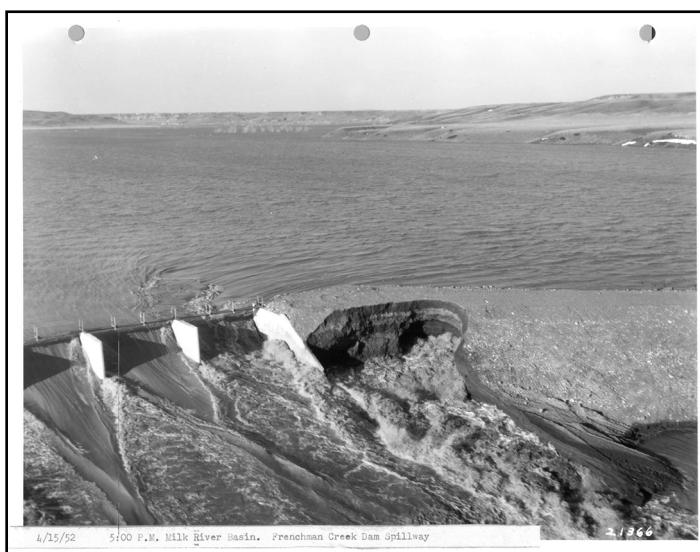


Photo 4. Failure of Dam on Frenchman Creek, April 15, 1952 (US NWS, 2016)

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Photo 5. Frenchman Dam failure April 16, 1952 (US NWS, 2016)

1972: Heavy rains were reported across the valley with several tributaries flooding as seen in Photo 6 of Cherry Creek.

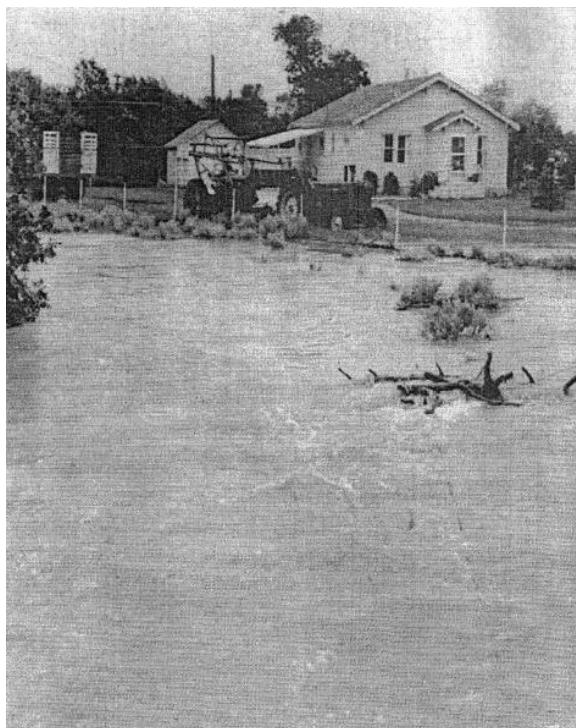


Photo 6. Cherry Creek west of Glasgow, June 15, 1972 (USDA, 1984).

1986: Fall rains resulted in flooding of most tributaries in the Glasgow area. Willow Creek washed out a county road south of Glasgow in October.

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2011: Flooding occurred throughout the four counties, from March through April. Ice jams and frozen topsoil contributed to the stage and expanse of flood waters.

2013: A federal disaster declaration was made for damages due to flooding which took place between May 19 and June 3, 2013. Damages occurred in Blaine, Hill and Valley counties.

2018: Flooding that occurred in the state from April 12 to June 15, resulted in a request for a major disaster declaration (later granted in August 2018). Damages due to flooding occurred in Blaine, Hill, and Valley Counties.

2019: Flooding from the period of March 20 to April 10, 2019 led to a presidential declaration of a major disaster in Valley County. No residences were reported to be impacted.

2.3.2.2 Recorded Data

There are 48 USGS gages located on 40 tributaries of the Milk River. The ten largest tributaries (by drainage area size) are listed in **Table 3** with their 5 highest recorded peak flows. While the 1952 and 1986 floods set most of the records at the USGS gages on the main stem of the Milk River, the tributaries do not necessarily follow the same pattern as evidenced by the peak flow dates.

Table 3. Peak flow data for select tributary gages in the Milk River watershed

Tributaries to the Milk River						
Station Name (Draining Area)	Big Sandy Creek near Havre (1,787 mi ²)		Battle Creek near Chinook (1,468 mi ²)		Fifteenmile Creek trib near Zurich (1.7 mi ²)	
Station Number	06139500		06151500		06153400	
Period of Peak Flow Data	1946-1953, 1955-1967, 1969, 1978, 1984-2018		1905-1914, 1916-1921, 1952, 1984-2018		1974-2018	
Number of Peak Flow Records	58		52		45	
Largest Recorded Events	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
	03/30/1978	6,000.	06/08/1906	11,000.	09/25/1986	1,250.
	04/03/1952	5,570.	03/31/1918	10,800.	04/21/2018	77.
	04/18/2018	4,300.	04/10/1917	7,800.	03/29/1978	70.
	04/12/1965	2,950.	06/21/1909	6,650.	07/10/1983	64.
	1969	2,600.	04/08/1912	6,650.	08/12/2002	63.

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Station Name (Drainage Area)	Peoples Creek below Kuhr Coulee near Dodson (688 mi ²)		Beaver Creek near Hinsdale (1,678 mi ²)		Unger Coulee near Vandalia (10 mi ²)	
Station Number	06154550		06167500		06172300	
Period of Peak Flow Data	1906, 1952-1966, 1968-1973, 1982-2009		1912, 1919-1921, 2005-2018		1958-2018	
Number of Peak Flow Records	50		18		61	
Largest Recorded Events	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)
	09/25/1986	7,590.	06/09/2011	8,210.	06/09/1972	4,460.
	06/07/1906	4,500.	10/05/2016	6,350.	07/05/1979	3,450.
	06/09/1972	3,940.	08/25/2014	5,830.	05/25/2010	636.
	03/30/1952	3,500.	04/18/2018	5,740.	07/14/1962	575.
	04/11/1965	3,360.	04/06/1912	4,630.	06/07/2011	542.
Tributaries to the Milk River						
Station Name (Drainage Area)	Frenchman Creek at International Boundary (1,960 mi ²)		Willow Creek near Glasgow (531 mi ²)		Porcupine Creek at Nashua (724 mi ²)	
Station Number	06164000		06174000		06175000	
Period of Peak Flow Data	1917-2018		1954-1987, 1993		1909-1921, 1923-1924, 1939, 1954, 1982-1993	
Number of Peak Flow Records	102		35		29	
Largest Recorded Events	Date	Peak Flow (cfs)	Date	Peak Flow (cfs)		
	04/15/1952	22,700.	07/14/1962	12,400.	1954	15,300.
	03/27/1997	8,370.	07/07/1969	12,000.	04/13/1982	6,600.
	03/30/1943	6,630.	06/21/1974	8,890.	03/06/1986	3,000.
	03/29/1925	5,440.	05/06/1965	5,220.	04/11/1916	2,700.
	03/25/1928	4,950.	03/20/1960	5,050.	08/20/1912	2,390.

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In addition to the discharge information available from the USGS, the National Weather Service (NWS) in Glasgow, MT also has gage data that is available on the website. Gages operated by NWS report stage data. Information available for the reported tributaries of the Milk River are summarized in **Table 4**.

Table 4. Peak stage data for NWS tributary gages in the Milk River watershed

Tributaries to the Milk River						
Station Name	Big Sandy Creek Near Havre		Battle Creek Near Chinook		Beaver Creek near Saco	
Station Number					GSCM8	
Action Stage / Flood Stage	10 ft / 12 ft		12 ft / 14 ft		9 ft / 11 ft	
Number of Peak Flow Records	57		50		13	
Largest Recorded Events	Date	Peak Stage(ft)	Date	Peak Stage(ft)	Date	Peak Stage(ft)
	03/30/1978	15.15	09/26/1986	22.91	09/26/1986	14.68
	04/03/1952	14.70	06/08/1906	16.63	10/07/2016	13.30
	04/19/2018	14.63	03/31/1918	16.50	03/24/2011	12.93
	06/06/2013	11.90	04/06/1952	15.38	04/06/2018	12.35
	04/12/1965	11.31	04/10/1917	13.10	08/28/2014	12.18
Tributaries to the Milk River						
NWS Station Name	Beaver Creek near Hinsdale		Rock Creek Near Opheim		Frenchman Creek Near Intl Boundary	
Station Number	BCHM8		ORHM8		FREM8	
Action Stage / Flood Stage	12 ft / 14 ft		N/A		10 ft / 12 ft	
Number of Peak Flow Records	20		13		48	

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Largest Recorded Events	Date	Peak Stage(ft)	Date	Peak Stage(ft)	Date	Peak Stage(ft)
	08/26/2014	19.52	03/28/1978	13.40	04/15/1952	19.90
	06/09/2011	19.44	04/07/1969	12.03	03/27/1997	17.62
	10/06/2016	18.50	03/29/1997	11.59	03/30/1943	16.36
	05/23/2011	18.12	04/12/2011	11.17	03/18/2017	15.51
	06/01/2011	18.10	04/06/1974	10.59	03/21/1976	15.49

3. Previous Studies

Various hydrologic studies have been conducted across the broader Milk River watershed, primarily flood-frequency analyses at select gaging stations or regression analyses at various ungaged locations.

The various sources of information are tied to previous FEMA flood insurance studies, other flood hazard studies, and data compiled by the USGS for stream gages within the watershed. A summary of the existing studies and documents are provided in the following sections.

3.1. Flood Insurance Studies

3.1.1. Blaine County

An original Flood Insurance Study (FIS) for Blaine County, Montana (All Jurisdictions) was published effective by FEMA on May 19, 1987 (FEMA 1987). An updated version of this FIS was effective on September 2006 (FEMA 2006).

The 1987 FIS was based on original hydrologic and hydraulic analyses performed on the Milk River and tributaries at or near the communities of Chinook, Zurich, and Harlem. Bulletin 17B flood-frequency analysis methods (IACWD, 1982) were applied at gaged sites, however the period of record for the flood-frequency analyses of gages on the Milk River below Fresno Dam only included peak flows after the dam was closed (1939) due to the attenuation the reservoir has on Milk River peak flows following completion of the dam. Although regional analysis equations developed by USGS (USGS 1981) were applicable for Milk River tributaries, an independent regression analysis was performed for the 1987 FIS based on 17 gaging stations within the immediate vicinity of the tributaries were developed based on contributing drainage areas and applied to the ungaged study areas. A USBR report on the Milk River flood of 1952 (USBR 1952) was used to evaluate and compare the results of the hydrologic analyses with actual flood data.

A restudy was completed with revised hydrologic and hydraulic analyses and incorporated into the 2006 FIS. The 2006 restudy was on reaches near the communities of Dodson, Hays, Harlem, Chinook, in unincorporated Blaine County, and at locations within the Fort Belknap Indian Reservation. The 2006 FIS used hydrologic results from a restudy of the mainstem Milk River and Tributaries using Bulletin 17B for gaged sites and USGS regional regression equations on ungaged tributaries.

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3.1.2. Phillips County

Original Flood Insurance Studies (FIS's) for Phillips County, Montana (City of Malta, Unincorporated Areas) was published effective by FEMA on May 19, 1987 (FEMA 1987). Peak flood-frequency relationships were developed using methods presented in Bulletin 17B, with records extending back prior to the closure of Fresno Dam (1939) truncated to reflect the attenuation effects of Fresno Reservoir. Regression equations based on the drainage area for the Milk River watershed between Havre and the confluence with the Missouri River were developed to estimate peak flood flows for ungaged locations on the Milk River in Phillips County between Havre and confluence with the Missouri River. A summary of hydrologic data from the 1952 flood are compiled in a USGS Water Supply Paper (USGS 1955). Information from this USGS Water Supply Paper were used to support the 1987 FIS.

3.1.3. Valley County

The effective FIS in Valley County (City of Nashua) was published effective June 4, 2007. This FIS is based on hydrologic analyses performed on Porcupine Creek derived from a 1993 USGS Water-Resources Investigation Report (Omang 1993). The 1993 USGS report performed flood-frequency analysis on the Porcupine Creek gage at Nashua using Bulletin 17B methodologies and modified using techniques presented in USGS Water-Resources Investigations Report (Omang 1992). The Blaine County FIS notes that the SCS completed a report on Milk River and Cherry Creek near Glasgow in 1984, however this report was not used in the Blaine County FIS nor is it referenced in the Valley County FIS.

3.1.4. Hill County

The effective FIS in Hill County (Town of Hingham and Unincorporated Areas) was published effective June 3, 1998. Hydrologic analysis for the Milk River were determined using flood-frequency analyses based on a USBR analysis for the design of Fresno Reservoir. Other gaged locations used flood-frequency analyses using Bulletin 17B. At an ungaged tributary to the Milk River, regional regression equations were utilized from a USGS Water-Resources Investigations Report (Omang et. Al 1986).

4. Hydrologic Analyses and Results

Hydrologic analyses were performed to identify the peak flow discharge estimates for flood events corresponding to the 10%, 4%, 2%, 1%, 0.2%, and 1% 'plus' annual exceedance probability (AEP) at specific locations on tributaries to the Milk River. Additionally, rainfall-runoff volume calculations were performed for each AEP at closed basin ponds and reservoirs throughout the watershed. The locations for these calculations define flow change locations throughout the watershed and generally correspond to the confluences between scoped tributaries in the watershed, intermediate flow changes locations where necessary due to significant changes in contributing drainage area between confluences, and at the location of closed basin ponds and reservoirs. The analyses conducted to identify hydrologic characteristics at these locations were performed using a regional regression

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equation approach to determine peak flows and a rainfall-runoff method to determine volume at closed basin ponds and reservoirs.

The Milk River watershed is comprised of eight major sub-watersheds on the HUC-8 scale in addition to minor tributaries contributing directly to the Milk River mainstem. All eight of these sub-watersheds contain some of the approximately 900 studied reaches in the watershed totaling over 2,100 miles. Contributing drainage basins were delineated for more than 2,000 flow change nodes with a little over 10% of these nodes representing closed basin waterbodies. The regional regression analysis, described in **Section 4.1**, was applied to the full dataset of nodes. A separate rainfall-runoff method, described in **Section 4.2**, was applied to the subset of closed basin ponds and reservoirs to determine flow volume at each closed basin pond or reservoir. The ponds and reservoirs were also included in the regression analysis to allow for conservative flood hazard analysis for any ponds or reservoirs that are determined to overtop during the hydraulic analysis.

Regional regression analysis was chosen as the best methodology to determine peak flows due to its relative accuracy and practical feasibility at the large scale of the Milk River watershed. Two other approaches were considered and ultimately rejected: rainfall runoff modeling, and the Nallick runoff estimation approach (Nallick, 1994). Rainfall runoff modeling for the entire watershed was rejected due to its infeasibility at the scale of this study, and because the accuracy would not likely be significantly greater than regression analysis. The Nallick runoff estimation approach was rejected because it applies to only drainage areas less than one square mile. Nearly all the tributaries in this analysis have drainage areas greater than one square mile.

Both the regression analysis and the rainfall-runoff volume analysis rely on a delineation of the upstream contributing drainage area to each flow change node. Basin delineation, characteristics, and peak flow estimation are all available through the StreamStats web application (Sando, et al. 2016). Given the reliance of the equations on these delineations and the low resolution of the StreamStats elevation source (30-meters), the delineation results were checked and corrected using an independent method. A high-resolution stream network was defined based on a 15ft digital elevation model (DEM), derived from LiDAR collected at a 3ft resolution. Nodes on the StreamStats flow network were assigned to the corresponding location on this new high-resolution network. The contributing drainage area to each node was then calculated using the ArcGIS Pro Hydrology Toolset. Outside of the area of LiDAR coverage, elevation data was supplemented with 10-meter DEMs in Montana (USGS, 2013a) and 0.75 arc-seconds (~20 meters) DEMs in Canada (Government of Canada, 2013). Contributing drainage areas for each node were compared between the two methods - an example of this is shown in **Figure 2**. When the difference in drainage area between the two methods was greater than 10%, the delineation was manually inspected by comparing elevation data and aerial imagery. By carefully examining the high-resolution topography alongside the StreamStats flow network and basins, discrepancies were identified. The area in the center of the bottom half of **Figure 3** illustrates that StreamStats delineation (solid black lines) crosses a topographic divide and includes contributing drainage areas that are properly depicted through the network developed from high resolution LiDAR data (dashed blue lines). If the StreamStats delineations were inconsistent with the more accurate high-resolution elevation data, as shown in **Figure 3**, the StreamStats delineation was

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replaced by the revised sub-basin. An exception to this methodology was made for delineations that included closed basins. In these cases, the StreamStats results were typically accepted, barring no other major discrepancies from the high-resolution topography. This exception took advantage of the StreamStats development work that involved individually reviewing sinks in the watershed. About one quarter of the flow change nodes were corrected using this high-resolution basin delineation. The replacements tended to occur in smaller sub-basins, with the median drainage area of high-resolution basins being about one third that of the StreamStats basins. The peak flows for these replacement nodes were calculated outside of StreamStats using regression equations as described in **Section 4.1**.

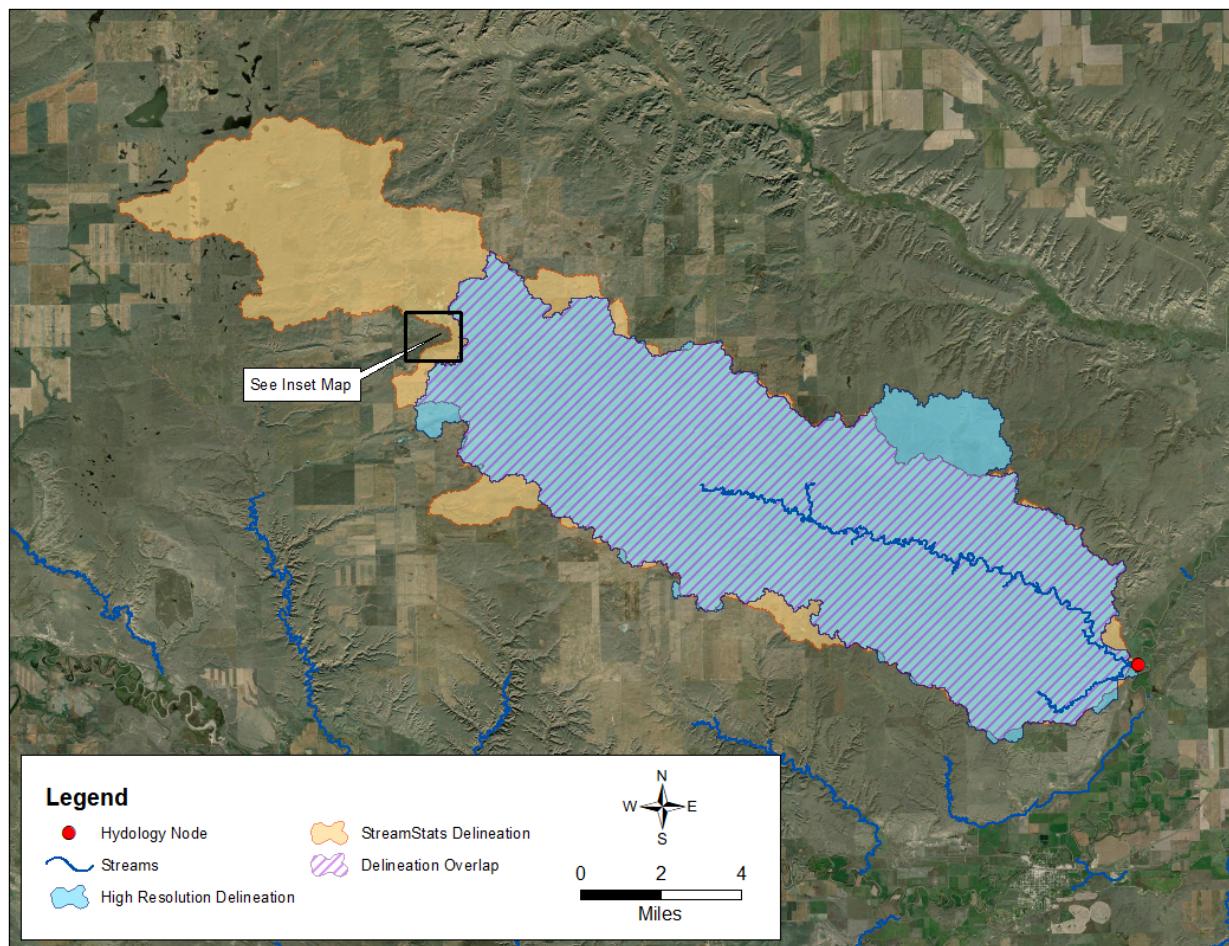


Figure 2: Sample drainage area comparison between the two delineation methods. See the inset map (Figure 3) for the source of the drainage area discrepancy.

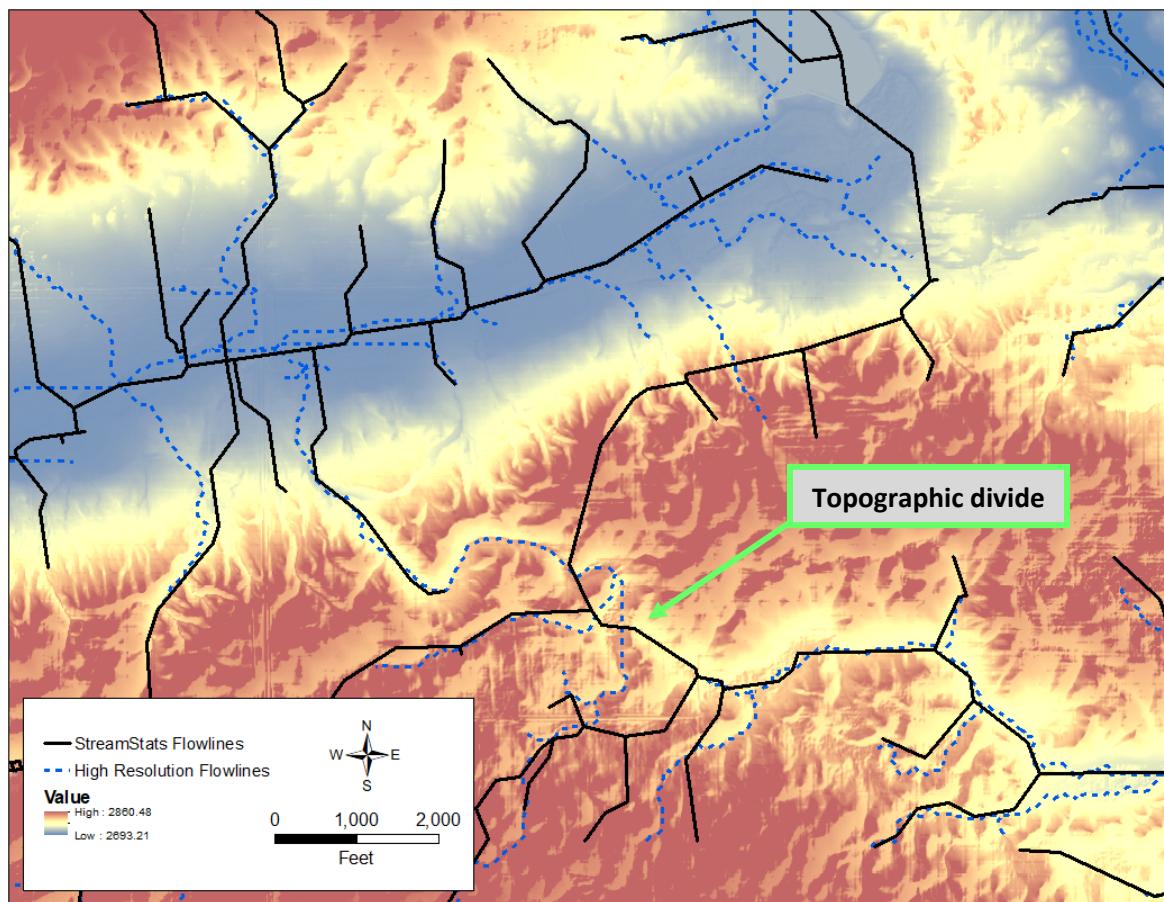


Figure 3: This image shows the inset map from Figure 2. Example of a significant discrepancy between StreamStats flow network and high resolution terrain data

4.1. Regional Regression Equations Method

The regional regression equation approach, developed by the U.S. Geological Survey (USGS) in cooperation with the Montana Department of Natural Resources and Conservation, was applied to the node locations to estimate peak-flow magnitudes associated with the 10, 4, 2, 1, and 0.2 percent annual exceedance probabilities. The methodology in this study relied on 537 gaging stations throughout the state of Montana that had a period of at least 10 years of systematic record, drainage area under 2,750 mi² and were unaffected by major regulation. Screening criteria also limited gages to those that were representative of peak-flow frequencies and included a redundant gaging-station analysis to account for spatial autocorrelation. An ordinary least squares regression was used in the study to adjust the boundaries between eight predetermined hydrologic regions. Final regression equations were developed for each hydrologic region using either generalized least squares regression or weighted least squares regression. The detailed methodology of regional regression analysis is described in Chapter F of Montana StreamStats (Sando, et al. 2018b).

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The Milk River watershed spans four of the eight hydrologic regions in Montana (Figure 4) with most of the flow change nodes located in the Northeast Plains region. The mean standard error of prediction (SEP) for the 1% AEP discharges calculated by this method ranges from 54.5 percent in the Northeast Plains, to 73.5 percent in the East-Central Plains region. For the nodes where the basin delineation in StreamStats was accepted, peak flow estimates are retrieved directly from the web application. Calculating flows for the roughly 500 nodes that were replaced required obtaining the explanatory variables using the high-resolution spatial delineations. Contributing drainage area to each node is the one common explanatory variable in flow calculation across all regions with the other basin characteristics varying by region. The process of calculating other explanatory variables is outlined in **Section 4.1.2**.

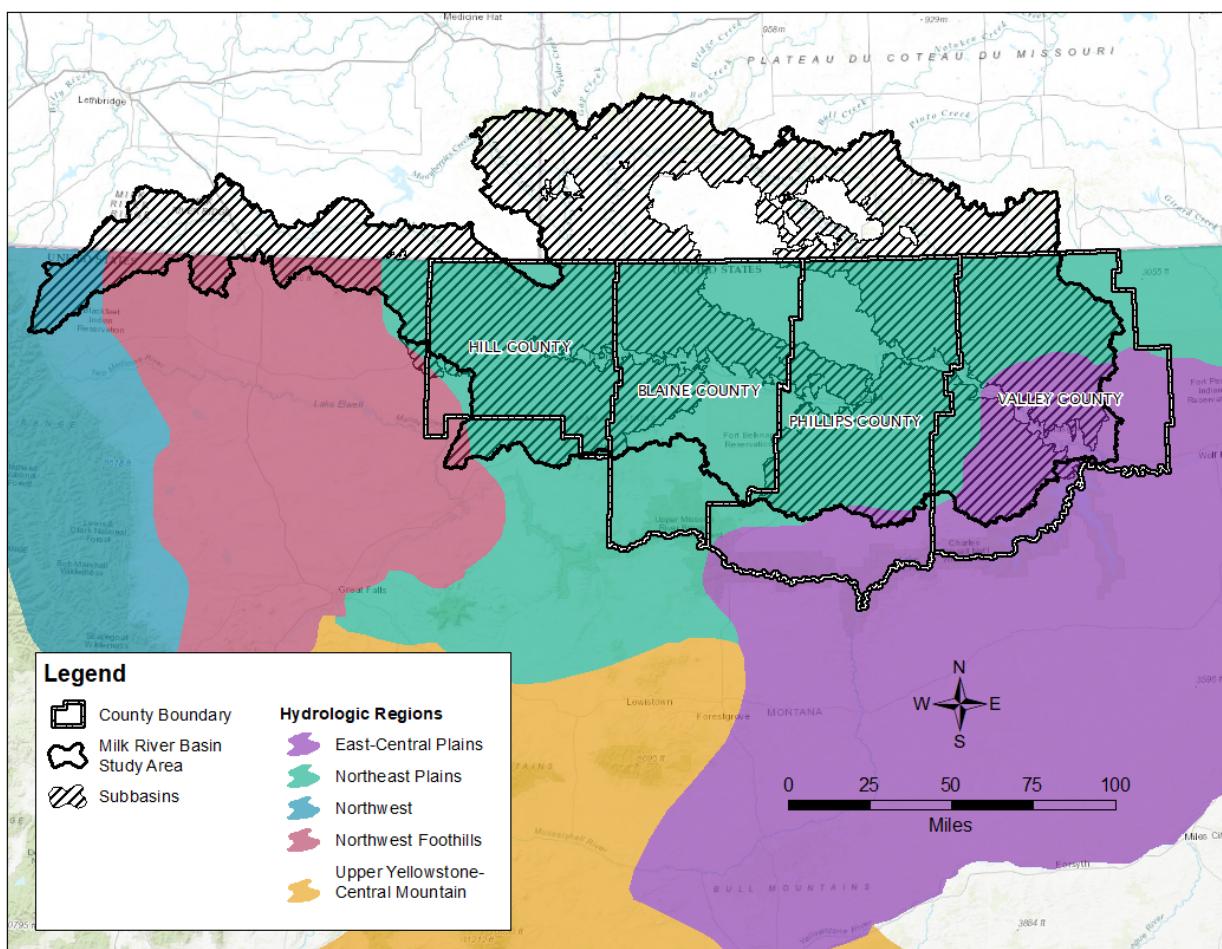


Figure 4: Montana Hydrologic Regions

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4.1.1. Regional Regression Equations

The regression equations vary for each of the five estimated recurrence intervals, with a consistent set of explanatory variables maintained within each hydrologic region outlined in **Table 5** (Sando, et al. 2018b). These equations were used to calculate the peak flow for all AEPs at all flow nodes. In addition to these recurrence intervals, FEMA flood risk products employ a method for determining peak discharge estimates for a standard error of prediction above the 1% AEP, known as the 1% plus discharge. This 1% plus discharge was calculated by adding the associated mean Standard Error of Prediction (SEP) to the 1% discharge. This calculation was made for nodes delineated by both methods, as the 1% plus discharge is not returned by the StreamStats web application.

Table 5: Regression equations for estimating peak-flow at ungaged sites

REGRESSION EQUATIONS FOR ESTIMATING PEAK-FLOW AT UNGAGED SITES						
Regression equation for indicated Q_{AEP}	Number of streamflow-gaging stations (n) ¹	σ_δ^2 (log units)	MVP (log units)	SEP (%)	SEM (%)	Pseudo or adjusted R^2 (%)
Northwest hydrologic region³						
$Q_{10} = 69.8 A^{0.808}$	32	0.019	0.021	34.4	32.5	88.4
$Q_4 = 132 A^{0.771}$	32	0.000	0.002	9.11	0.00	89.4
$Q_2 = 223 A^{0.732}$	32	0.000	0.002	11.3	0.00	88.0
$Q_1 = 371 A^{0.695}$	32	0.000	0.004	13.6	0.00	84.4
$Q_{0.2} = 1,171 A^{0.614}$	32	0.000	0.007	19.3	0.00	67.0
Northwest Foothills hydrologic region²						
$Q_{10} = 0.916 A^{0.433} P^{1.83}$	31	0.042	0.052	56.4	50.2	88.5
$Q_4 = 3.24 A^{0.451} P^{1.57}$	31	0.039	0.050	55.2	48.1	88.7
$Q_2 = 7.60 A^{0.469} P^{1.38}$	31	0.044	0.056	59.1	51.0	87.5
$Q_1 = 16.3 A^{0.487} P^{1.20}$	31	0.053	0.068	65.8	56.7	85.4
$Q_{0.2} = 76.6 A^{0.530} P^{0.844}$	31	0.088	0.111	89.5	76.9	78.5
Northeast Plains hydrologic region²						
$Q_{10} = 62.5 A^{0.617} (E_{5000} + 1)^{-0.231}$	64	0.042	0.047	53.1	49.8	90.2
$Q_4 = 121 A^{0.594} (E_{5000} + 1)^{-0.262}$	64	0.036	0.041	49.2	45.5	90.6

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$Q_2 = 181 A^{0.579} (E_{5000} + 1)^{-0.280}$	64	0.037	0.043	50.7	46.6	89.4
$Q_1 = 257 A^{0.565} (E_{5000} + 1)^{-0.292}$	64	0.042	0.049	54.5	50.0	87.4
$Q_{0.2} = 506 A^{0.535} (E_{5000} + 1)^{-0.308}$	64	0.061	0.070	67.3	61.9	80.4
East-Central Plains hydrologic region²						
$Q_{10} = 178 A^{0.489} (SLP_{30} + 1)^{0.214} ET_{SPR}^{-3.90}$	90	0.053	0.060	60.9	57.2	81.7
$Q_4 = 337 A^{0.468} (SLP_{30} + 1)^{0.254} ET_{SPR}^{-3.65}$	90	0.056	0.063	62.7	58.5	79.5
$Q_2 = 497 A^{0.454} (SLP_{30} + 1)^{0.279} ET_{SPR}^{-3.48}$	90	0.062	0.070	67.2	62.5	76.4
$Q_1 = 692 A^{0.442} (SLP_{30} + 1)^{0.299} ET_{SPR}^{-3.32}$	90	0.072	0.082	73.5	68.3	72.4
$Q_{0.2} = 1,290 A^{0.418} (SLP_{30} + 1)^{0.337} ET_{SPR}^{-2.98}$	90	0.105	0.118	93.1	86.2	61.3

[Q_{AEP} , peak-flow magnitude, in cubic feet per second, for annual exceedance probability (AEP) in percent; n, number of streamflow-gaging stations used in developing regression equations for indicated hydrologic region; σ_δ^2 , model error variance; MVP, mean variance of prediction; SEP, mean standard error of prediction; SEM, mean standard error of model; Pseudo R², pseudo coefficient of determination presented for generalized least squares regression analysis; Adjusted R², adjusted coefficient of determination presented for weighted least squares regression analysis; A, contributing drainage area, in square miles; P, mean annual precipitation, in inches; E₅₀₀₀, percentage of basin above 5,000 feet elevation; SLP₃₀, percentage of basin with slope greater than 30 percent; ET_{SPR}, Mean spring (March–June) evapotranspiration, in inches per month]

¹The number of streamflow-gaging stations used in the Q_{66.7} regression equation for a region might differ from the number of streamflow-gaging stations used in all other regression equations in that region because of streamflow-gaging stations with unreported Q_{66.7} values (table 1–2), which is discussed further in Sando, McCarthy, and Dutton (2016).

²Regression equations were developed using generalized least squares regression analyses.

³Regression equations were developed using weighted least squares regression analyses.

In addition to the contributing drainage area, calculated as a feature of the basin polygons, there are four explanatory variables required for flow calculation across the study area. The elevation-based variables, percentage of basin above 5,000 feet elevation (E₅₀₀₀) and percentage of basin with slope greater than 30 percent (SLP₃₀), were both calculated based on 30-meter DEMs (USGS, 2013b) utilizing the Spatial Analyst Toolbox in ArcGIS Pro. The meteorological variables, mean annual precipitation (P) and mean spring evapotranspiration (ET_{SPR}), were found to have minimal spatial variability on the scale of the basin delineations. It was determined that the differences between the two delineation methods would not significantly affect the P and ET_{SPR} values for an individual basin. For the high-resolution basin delineations, these variable values were taken from corresponding StreamStats basin results.

In some cases, basin delineations cross multiple hydrologic regions. For these sub-basins, discharges were separately calculated using the basin characteristics and equations for each hydrologic region. A weighted average of these discharges was then calculated based on the percentage of the basin area in each hydrologic region. When the contributing drainage area extended into Canada, hydrologic region boundaries were extrapolated to encompass the areas outside of defined zones. This was only necessary for a handful of basins that extended less than 2 miles across the border within the Northeast Plains region and is consistent with the regional regression document. Both the final discharge and the percentage of the basin area in each hydrologic region were reported.

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4.1.2. Flow Change Node Locations

Flow change nodes typically fall into three types of placements throughout the study area. At all confluences between scoped stream segments, nodes were placed on each contributing branch just upstream of the confluence with a third node placed just downstream of the confluence as shown in **Figure 5**. Potential differences in the timing of peak flows on either branch above a confluence mean that the two values are not necessarily additive when calculating the peak flow downstream of the confluence. The node directly downstream of the confluence exists to combine the flows of the two branches in a manner that accounts for this potential difference in peak timing. Between or above confluences, nodes were placed at intermediate flow change locations just upstream of tributaries where there are significant changes in contributing drainage area, as shown in **Figure 6**. The intermediate nodes were spaced such that each node has a 10-20% increase in drainage from the adjacent upstream node. The third node placement type was at the outlet of closed basin waterbodies. Many of these locations are not located on either scoped or mapped streams, as shown in **Figure 7**. These nodes were placed with the intention of capturing the entire contributing drainage area into the waterbody. These delineations were used in the regression analysis as well as the closed basin analysis described in **Section 4.2**.

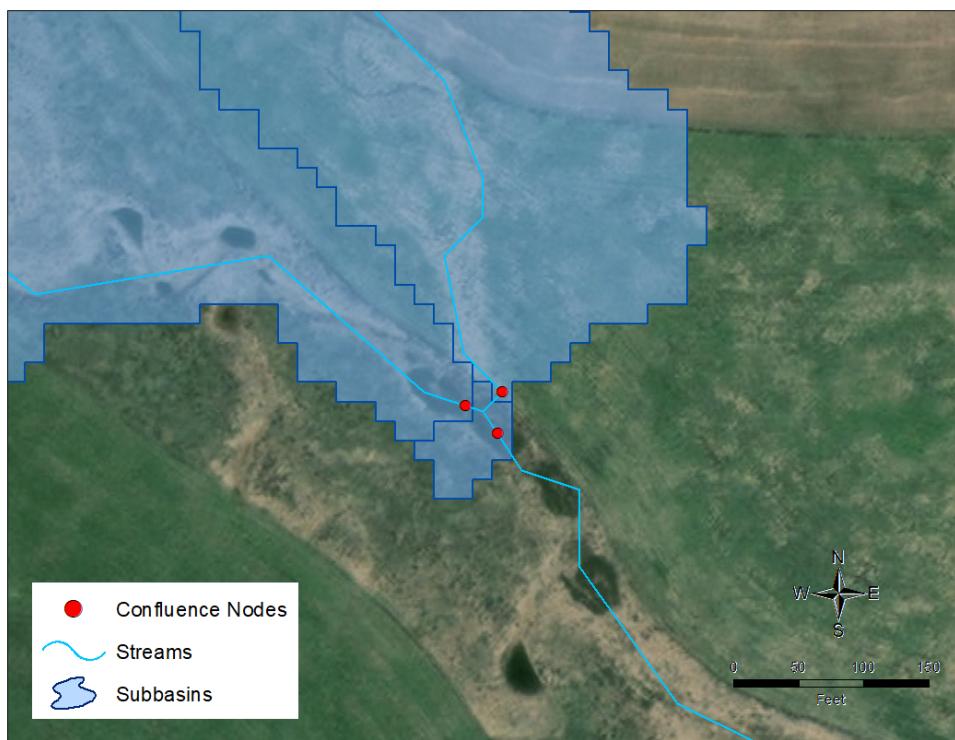


Figure 5: Example of hydrologic node placement at a confluence

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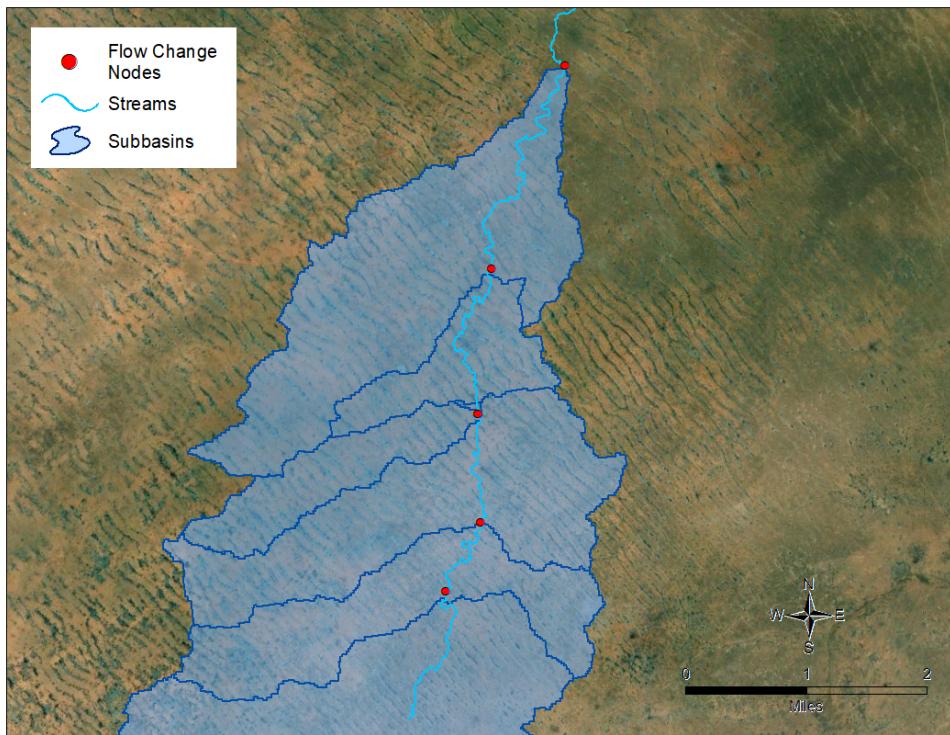


Figure 6: Example of intermediate hydrologic node placement

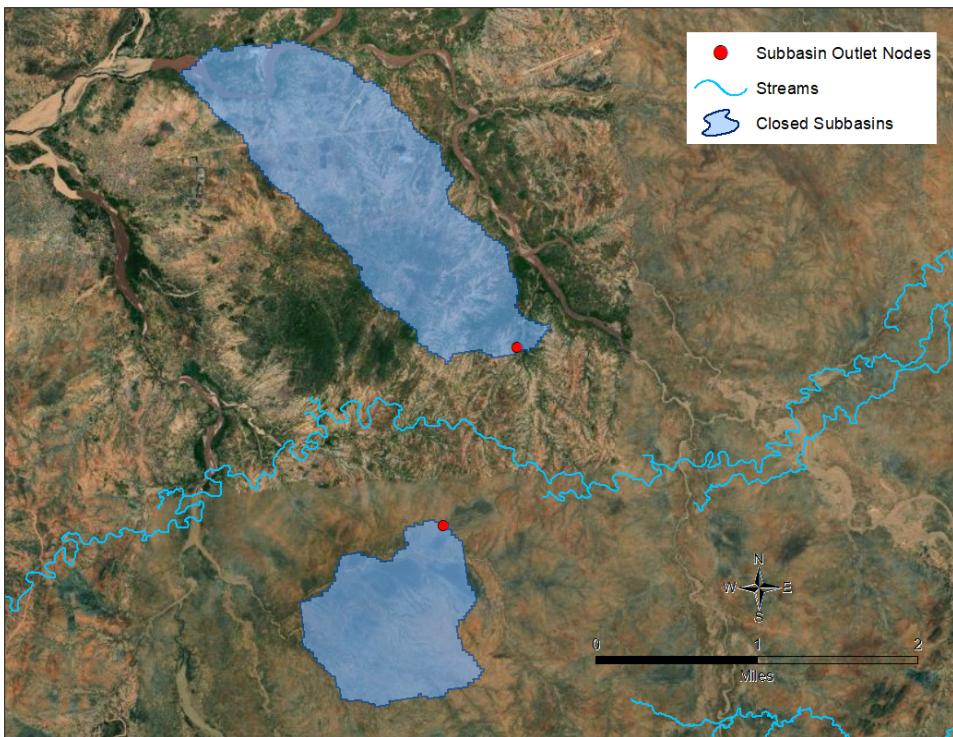


Figure 7: Example of hydrologic node placement for closed basin waterbodies

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As described in **Section 4**, sub-basins within the Milk River watershed were delineated in order to determine tributary flows and to establish flow change locations. A comparison was made between these delineated watersheds and the effective mapped special flood hazard areas (SFHAs) to confirm that a stream centerline has been generated for each of the mapped SFHAs. In SFHAs where stream centerlines had not been previously generated, stream lines were created from the high-resolution topographic data as described in **Section 4**. **Figure 8** provides an example of a mapped tributary where a stream centerline was not available and a “new” stream line was created and added to the overall stream network. Note that following existing FEMA practice, a screening process was applied to eliminate watersheds with contributing drainage areas less than 1 square mile. The 1 square mile threshold was applied to avoid establishing flooding sources and subsequent hydraulic analyses of locations that would provide negligible flooding risk. An example of this is also provided in **Figure 8** and is represented by the lobe in the SFHA immediately to the north of “new” stream line. Flooding risk at these locations are properly represented as areas of backwater from mainstem tributary flooding source.

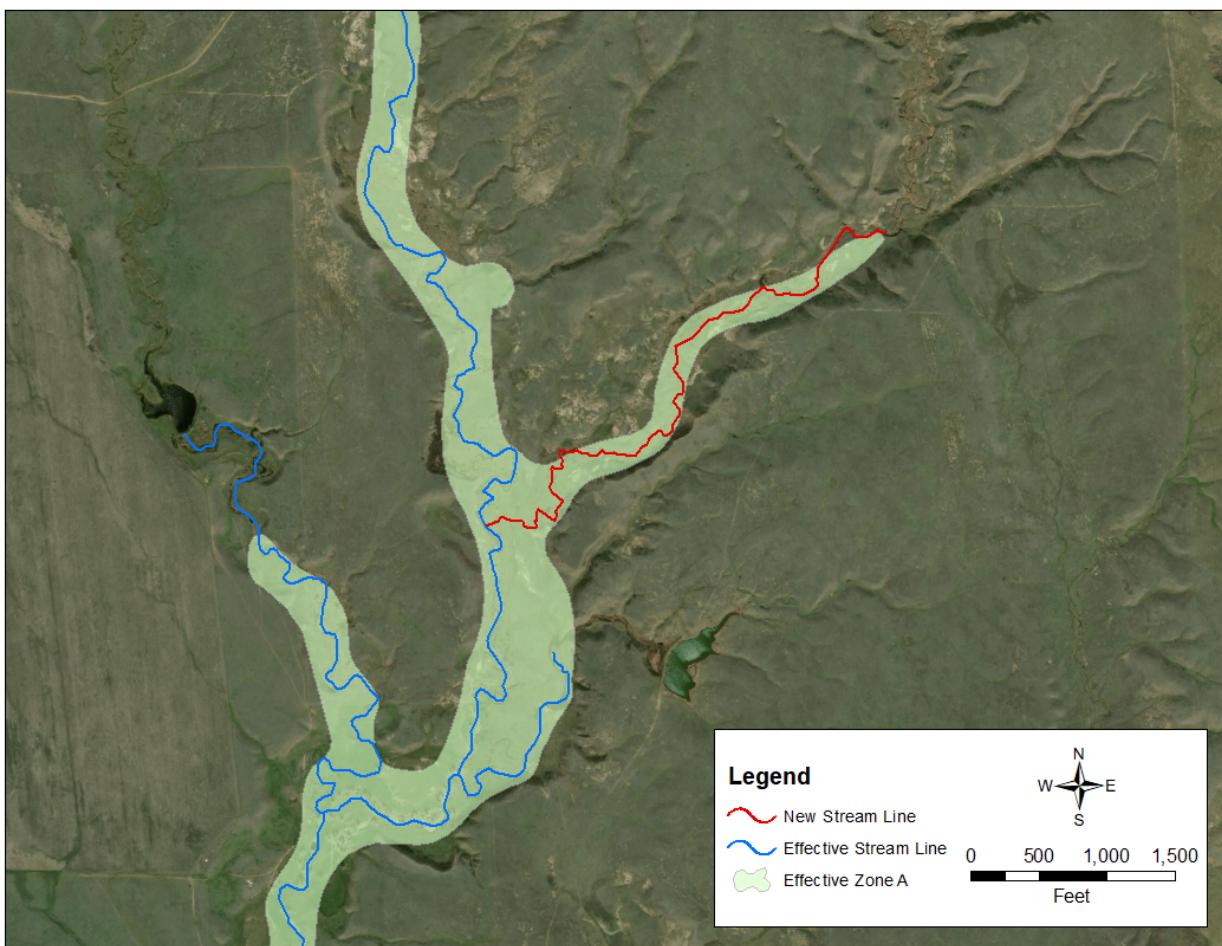


Figure 8: Example of a stream line added to the stream network that will be included in the limits of flood study analyses.

4.2. Closed Basins, Ponds, and Reservoirs Method

Total flow volumes were calculated for closed basins, ponds, and reservoirs in the Milk River watershed using rainfall-runoff calculations. This methodology was based on the guidance document titled “Recommendations for the Treatment of Reservoirs and Closed Basin Lakes for Flood Studies in Montana” (Michael Baker International, 2019; note this reference is available from Montana DNRC and is included as supplemental information on FEMA Mapping Information Platform). All ponds and reservoirs in the watershed were determined to be in FEMA risk class C – low population densities within the floodplain, with small or no anticipated growth. Hydrologic steps in this methodology include determining the contributing drainage area, determining rainfall for a single event for each AEP, determining the total volume of flow to the pond or reservoir for each AEP for the single event, and performing checks to confirm that that the single-event estimation is not under-predicting the flood hazard.

A total of 284 ponds and reservoirs were analyzed. It should be noted that none of these ponds or reservoirs has dedicated volume for flood storage, so peak discharges on downstream flooding sources were not adjusted.

4.2.1. Runoff Volume

Runoff volume was calculated for each AEP at all 284 ponds and reservoirs using the subbasin drainage areas calculated for the entire watershed. For the closed ponds and reservoirs, hydrologic nodes were placed at the outlet location for each feature. A full description of subbasin delineations and determinations of contributing drainage area is provided in **Section 4**.

A 24-hour storm was selected for volume analysis for each of the AEPs. This storm duration is recommended for typical consideration in the “Recommendations for the Treatment of Reservoirs and Closed Basin Lakes for Flood Studies in Montana” document because it is appropriately conservative and is consistent with most typical FEMA studies, including rain-on-grid BLE analyses. Rainfall depths were taken from NOAA Atlas 2, Volume 1, (NOAA, 1973) which contains the most recent rainfall depth data for storm events in the state of Montana. Gridded precipitation data was available for NOAA for the 2-year, 24 hour storm and the 100-year, 24 hour storm. This gridded data was analyzed in GIS to determine the average precipitation depth for each subbasin.

Precipitation depth for other AEPs (such as the 10, 4, 2, and 0.2 percent annual exceedance probabilities were determined using log-normal interpolation and extrapolation from the 50% annual exceedance probability depth and the 1% -annual-exceedance probability depth for each subbasin. This was done because digital gridded precipitation depths for these exceedance probabilities were not available from NOAA and attempting to extract the data from the isopluvial pdf maps for these exceedance probabilities would not have yielded precise results. Spot checks of the calculated depths for other exceedance probabilities against the NOAA Atlas isopluvial maps confirmed that these results were reasonable. Precipitation depths for the “1%-plus” annual exceedance probability was

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calculated using the 1% annual exceedance depths and the standard error provided in the NOAA Atlas document (0.42 inches).

Next, a Depth-Area Reduction Factor (DARF) for each subbasin was calculated using the relationship provided in NOAA Atlas 2. This reduction is necessary to account for the fact that storms spread over larger subbasins are likely to have reduced precipitation depths compared to smaller subbasins, or the point precipitation that the NOAA Atlas rainfall depths are based on. The 24 hour DARF curve in the NOAA Atlas was re-created and assigned a best fit line. The equation of this line was used to determine the DARF for each subbasin, dependent on the subbasin's drainage area. Calculated DARFs for the entire watershed ranged from 1.00 to 0.87.

Next, a weighted average curve number was determined for each subbasin. This was done using land use data from the Montana Natural Heritage Program (MT NHP, 2017), soils data from the U.S. Department of Agriculture's Natural Resources Conservation Service (Soil Survey Staff, 2020), and a curve number table adapted from the USDA's Urban Hydrology for Small Watersheds Technical Release 55 (USDA, 1986). The land use and soils data were processed into raster format and reclassified according to the categories outlined in Table 2-2 of USDA, 1986. By multiplying corresponding rasters and calculating a spatially weighted average within each subbasin polygon, curve numbers were generated for all the 284 ponds and reservoirs. These curve numbers used are provided in **Table 6**.

Table 6: Curve numbers for each combination of hydrologic soil type and land use classification

Land Use Classification	Hydrologic Soil Type			
	A	B	C	D
Water/Wetland	100	100	100	100
Open space	49	69	79	84
Residential - 1/4 acre	61	75	83	87
Residential - 1/8 acre	77	85	90	92
Urban districts - commercial and business	89	92	94	95
Impervious - Streets and Roads - Gravel	76	85	89	91
Impervious - Streets and Roads - Paved - Right of way	83	89	92	93
Pasture, grassland, or range	49	69	79	84
Cultivated Agricultural Land ¹	64	74	81	85
Western desert urban areas - artificial	96	96	96	96
Western desert urban areas - natural	63	77	85	88

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Woods	36	60	73	79
Woods-grass combination	43	65	76	82
Brush	35	56	70	77
Pasture, grassland, or range	49	69	79	84
Fallow - Bare Soil	77	86	91	94
Open Space - poor	68	79	86	89

¹Median of Table 2-2b values (USDA, 1986)

Using the Curve Number data for each subbasin, Soil Moisture Retention (S), Initial Abstraction (I_a), and Runoff Depth were calculated for each AEP in each subbasin. This was done using the SCS Curve Number method (USDA, 1986), and executed using the three equations below.

$$S = \frac{1000}{CN} - 10$$

$$I_a = 0.2S$$

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S}$$

Where Q is the Runoff (in inches), P is the rainfall depth (in inches), S is the potential maximum retention after runoff begins (in inches), and I_a is the initial abstraction (in inches).

Once the runoff depth was calculated, the total volume for each AEP in each subbasin was calculated by multiplying the runoff depth by the drainage area and adjusting the units to acre-feet. This result is the total volume of water in each pond or reservoir after the 24-hour event.

4.2.2. Annual Precipitation Check

While single-event rainfall is likely the primary source of effects on smaller closed basin lake levels, it's necessary to confirm this assumption through the consideration of a water-balance method using long term average precipitation amounts. This check also can account for snowmelt-driven flood events. To perform this check, historic annual precipitation averages and evaporation rates were determined.

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Mean annual precipitation was taken from data collected by the Montana Department of Environmental Quality (Montana Dept. of Environmental Quality, 2011). This data is based on averaged annual precipitation data from 1980 through 2010. The data comes in gridded digital form, and average annual precipitation for each subbasin was calculated in GIS. This annual precipitation data is shown in **Figure 9**.

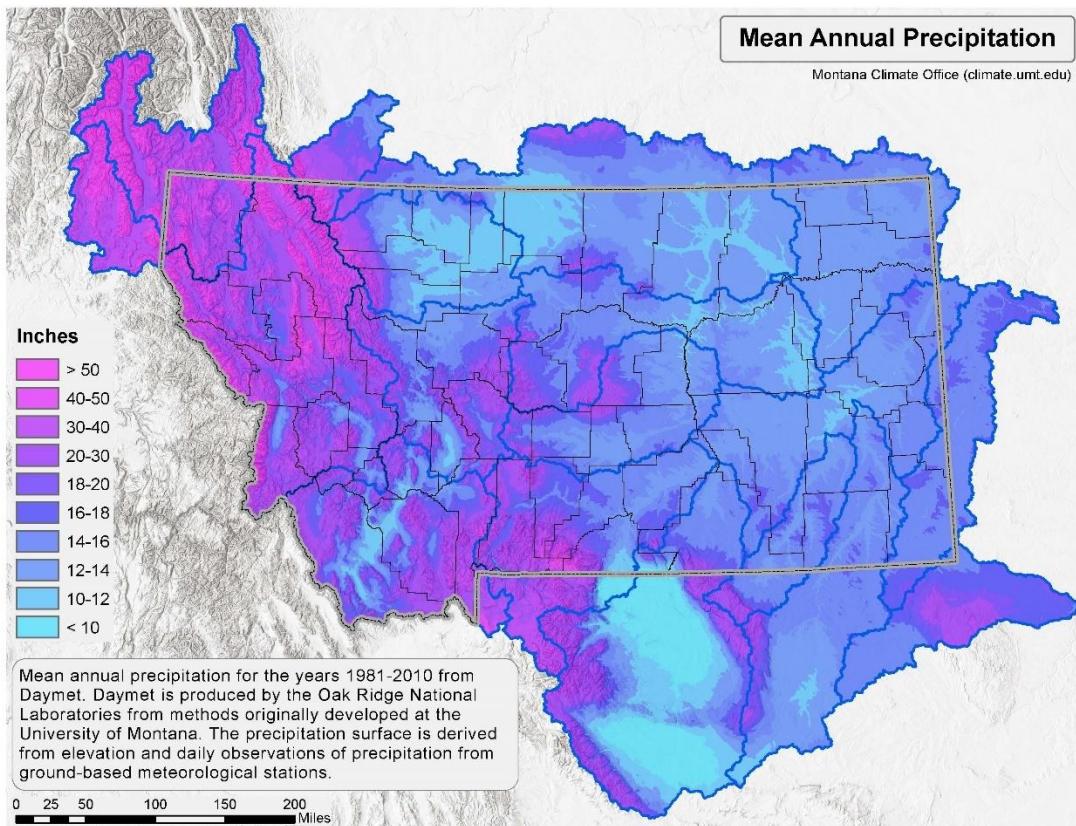


Figure 9: Mean annual precipitation

No infiltration or absorption is accounted for this annual precipitation check, under the conservative assumption that all rainfall or snowment in each subbasin will ultimately flow to the pond or reservoir, potentially via groundwater. Therefore, the annual flow to the pond or reservoir is equal to the annual amount of rainfall in the subbasin.

Average annual evaporation was taken from data provided by the Western Regional Climate Center (Western Regional Climate Center website). The climate center has a long period of record making monthly average pan evaporation measurements at stations across Montana. Four stations are in the Milk watershed: Fort Assinniboine, Fort Peck, Fort Peck Power Plant, and Malta 7E. There is no clear relationship between evaporation measurements and their geographic location within the watershed, so an average of these four stations, weighted by period of record, was calculated and applied to the entire watershed. Per Western Region Climate Center recommendations, the pan evaporation amounts were multiplied by 0.8 to represent evaporation from natural surfaces (instead of pans). The measurements were also adjusted to include winter months (when pan measurements are not

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taken), by adding the proportion of annual evaporation that takes place in those months according to an evaporation study for the State of Montana. (Potts, 1988).

In order to make a final determination as to whether the annual rainfall check produces higher water surface elevations than the single event rainfall, it will be necessary to understand the dimensions of each pond or reservoir. This final check will be performed using the annual precipitation and evaporation rates during the hydraulic phase of the project.

5. Summary/Discussion

This peak flow frequency analysis was performed for tributaries to the Milk River in Valley County, Phillips County, Blaine County, and Hill County, Montana. The peak flow frequency analyses were performed for the flows that correspond to the 10%, 4%, 2%, 1%, and 0.2% AEPs. In addition to these AEPs, the 1%plus discharge value was determined at each flow node, which incorporates a standard error of prediction into the 1% AEP calculations. These peak flows were calculated using 2018 State of Montana regression equations. The standard error of prediction for the peak flow rates for the 1% annual-exceedance-probability event ranges from 54.5% in the Northeast Plains hydrologic region to 73.5% in the East-Central Plains hydrologic region. The peak flows for approximately 2,000 flow nodes are provided in **Appendix A**.

The USGS has released provisional peak flow frequency analyses at gage locations throughout the watershed. Seventeen of these gage locations correspond roughly to node locations where peak flows were determined for this analysis. At sixteen of these seventeen locations, discharges calculated by USGS fell within the standard error of prediction for the regression equation. At one location (Gage 06155200, Alkali Creek near Malta), the regression results falls just outside of the standard error. Once USGS finalizes their peak flow frequency analyses at gage locations, we anticipate calculating weighted estimates of discharges at these 17 locations using the methodology described in Appendix 9 of Bulletin 17C (England et al, 2018).

Additionally, runoff volume was calculated for each AEP at all 284 scoped ponds and reservoirs in the watershed. Runoff volumes for 24-hour storms were calculated using the curve number method. The standard error of estimate for the rainfall depths, according the NOAA Alas, is 0.43 inches – Additionally, hydrologic calculations were performed to check if typical annual rainfall, reduced by typical evaporation rates, would lead to higher water surface elevations. These calculations will be used during the hydraulic phase of the project to determine water surface elevations. Volumes at the ponds and reservoirs, along with annual rainfall and evaporation, is provided in **Appendix B**.

All flow values and volumes were determined using methods that meet FEMA guidance and standards. The results of this study will be used to produce revised flood hazard mapping in Valley County, Phillips County, Blaine County, and Hill County.

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Appendix A.

Table of Discharges

HYDROLOGY NODE DISCHARGE TABLE								
NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	
10%	4%	2%	1%	1% Plus	0.2%			
976	Blaine	7.18	211	390	567	783	1210	1450
977	Blaine	1.71	87.1	166	247	348	538	674
978	Blaine	8.89	241	443	641	883	1360	1630
979	Blaine	9.00	242	446	646	889	1370	1640
981	Blaine	135.93	826	1340	1800	2340	3620	3850
984	Blaine	1.96	94.8	181	268	376	581	726
985	Blaine	317.21	2180	3700	5080	6660	10300	11000
986	Blaine	319.17	2190	3720	5100	6680	10300	11100
988	Blaine	9.39	249	458	662	911	1410	1680
989	Blaine	331.73	2240	3800	5210	6830	10600	11300
990	Blaine	322.33	2210	3740	5130	6720	10400	11100
991	Blaine	349.52	2320	3920	5370	7030	10900	11600
994	Blaine	25.74	464	833	1190	1610	2490	2880
995	Blaine	28.41	493	883	1260	1700	2630	3030
996	Blaine	54.15	734	1300	1830	2450	3790	4280
997	Blaine	54.65	738	1300	1840	2460	3800	4300
999	Blaine	14.68	328	597	858	1170	1810	2130
1000	Blaine	1088.83	4670	7700	10400	13400	20700	21300
1002	Blaine	16.69	355	644	924	1260	1950	2280
1003	Blaine	1572.82	5860	9590	12800	16400	25300	26000
1004	Blaine	1572.22	5860	9580	12800	16400	25300	26000

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
1005	Blaine	26.91	477	855	1220	1650	2550	2950
1006	Blaine	1545.31	5800	9490	12700	16300	25200	25700
1007	Blaine	1538.94	5790	9460	12700	16200	25000	25700
1008	Blaine	2.15	100	191	282	396	612	762
1009	Blaine	1536.79	5780	9450	12700	16200	25000	25600
1011	Blaine	1530.38	5770	9430	12600	16200	25000	25600
1012	Blaine	45.17	656	1160	1640	2210	3410	3890
1013	Blaine	1485.21	5660	9260	12400	15900	24600	25200
1015	Blaine	33.76	548	979	1390	1880	2900	3330
1016	Blaine	5.98	188	350	510	706	1090	1320
1017	Blaine	27.12	479	859	1220	1660	2560	2960
1019	Blaine	27.03	478	858	1220	1660	2560	2950
1020	Blaine	4.10	149	280	410	571	882	1080
1021	Blaine	22.92	432	778	1110	1510	2330	2700
1024	Blaine	1465.14	5610	9190	12300	15800	24400	25000
1025	Blaine	9.53	251	462	668	919	1420	1690
1026	Blaine	1474.68	5640	9230	12400	15900	24600	25100
1034	Blaine	7.09	209	387	563	777	1200	1440
1035	Blaine	22.29	424	765	1090	1480	2290	2660
1037	Blaine	30.57	516	923	1310	1770	2730	3150
1038	Blaine	3.74	141	265	389	542	837	1030
1039	Blaine	33.93	550	982	1390	1880	2900	3330
1040	Blaine	53.14	725	1280	1810	2430	3750	4240
1041	Blaine	5.64	182	338	493	683	1060	1280
1042	Blaine	58.79	772	1360	1910	2570	3970	4470
1043	Blaine	58.96	773	1360	1920	2570	3970	4480

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
1045	Blaine	0.23	25.3	50.7	77.5	112	173	231
1046	Blaine	5.52	179	334	487	675	1040	1260
1047	Blaine	5.28	174	325	474	658	1020	1230
1050	Blaine	288.18	1750	2920	3960	5150	7960	8460
1052	Blaine	1.52	80.9	155	230	325	502	633
1053	Blaine	15.00	332	604	868	1190	1830	2150
1055	Blaine	3.89	145	271	398	554	856	1050
1057	Blaine	166.03	1460	2520	3490	4620	7130	7800
1058	Blaine	32.38	534	955	1360	1830	2830	3250
1059	Blaine	104.62	1100	1920	2670	3560	5500	6090
1060	Blaine	65.64	826	1450	2040	2730	4220	4750
1061	Blaine	38.72	597	1060	1500	2030	3140	3580
1065	Blaine	15.19	335	609	874	1200	1850	2170
1066	Blaine	25.23	458	823	1170	1590	2460	2850
1067	Blaine	10.04	259	476	688	946	1460	1740
1068	Blaine	28.13	490	878	1250	1690	2610	3020
1069	Blaine	55.29	743	1310	1850	2480	3830	4330
1070	Blaine	27.16	479	860	1220	1660	2560	2960
1071	Blaine	3.97	146	274	402	560	865	1060
1072	Blaine	18.58	379	686	983	1340	2070	2420
1073	Blaine	22.98	432	779	1110	1510	2330	2710
1078	Blaine	111.39	1140	1990	2770	3680	5690	6300
1079	Blaine	92.50	1020	1780	2490	3320	5130	5700
1080	Blaine	17.85	370	670	960	1310	2020	2360
1081	Blaine	75.39	900	1580	2210	2960	4570	5110
1083	Blaine	60.81	788	1390	1950	2620	4040	4560

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
1084	Blaine	38.19	592	1050	1490	2010	3110	3550
1085	Blaine	22.64	428	772	1100	1500	2320	2690
1086	Blaine	36.71	577	1030	1460	1970	3040	3480
1087	Blaine	22.14	423	762	1090	1480	2280	2650
1088	Blaine	14.32	323	588	845	1160	1790	2100
1091	Blaine	10.57	268	491	709	974	1500	1790
1092	Blaine	8.49	234	431	625	861	1330	1590
1093	Blaine	19.07	385	697	998	1360	2100	2450
1098	Blaine	6.72	202	375	545	754	1160	1400
1099	Blaine	11.62	284	519	749	1030	1590	1880
1100	Blaine	18.35	376	681	976	1330	2050	2400
1102	Blaine	19.35	389	703	1010	1370	2120	2470
1103	Blaine	25.15	457	822	1170	1590	2460	2840
1104	Blaine	4.99	168	314	459	637	984	1200
1105	Blaine	38.73	597	1060	1500	2030	3140	3580
1106	Blaine	42.18	629	1120	1580	2130	3290	3750
1107	Blaine	80.92	940	1640	2300	3080	4760	5310
1108	Blaine	26.68	474	851	1210	1640	2530	2930
1109	Blaine	12.96	304	554	798	1090	1690	1990
1110	Blaine	36.61	576	1030	1460	1960	3030	3470
1112	Blaine	12.58	298	545	784	1070	1660	1960
1113	Blaine	4.71	163	304	444	617	953	1160
1114	Blaine	7.66	220	406	589	812	1250	1500
1117	Blaine	104.39	1100	1910	2670	3550	5480	6080
1119	Blaine	36.86	579	1030	1460	1970	3040	3490
1420	Blaine	4.28	153	287	420	584	902	1100

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
1634	Blaine	22.28	424	765	1090	1480	2290	2660
1635	Blaine	18.00	372	674	965	1320	2040	2380
1637	Blaine	13.14	306	559	804	1100	1700	2010
1638	Blaine	11.49	282	516	744	1020	1580	1870
2136	Blaine	7.37	214	396	576	795	1230	1470
2138	Blaine	8.43	233	429	622	857	1320	1580
2140	Blaine	10.93	273	501	723	992	1530	1820
2142	Blaine	31.22	522	934	1330	1800	2780	3190
2144	Blaine	34.55	556	992	1410	1900	2940	3370
2146	Blaine	94.50	1030	1800	2520	3360	5190	5770
2150	Blaine	25.73	464	833	1190	1610	2490	2880
2152	Blaine	33.14	542	968	1370	1860	2870	3290
2154	Blaine	3.74	141	265	389	542	837	1030
2156	Blaine	6.08	190	354	515	713	1100	1330
2160	Blaine	8.30	231	425	616	849	1310	1570
2163	Blaine	12.24	293	536	772	1060	1640	1930
2165	Blaine	14.65	327	596	856	1170	1810	2130
2167	Blaine	15.97	345	627	900	1230	1900	2230
2171	Blaine	70.57	864	1520	2130	2850	4400	4930
2173	Blaine	17.04	360	652	935	1280	1970	2310
2178	Blaine	21.27	412	744	1060	1450	2240	2600
2179	Blaine	3.77	142	266	390	544	840	1030
2183	Blaine	5.93	187	348	507	703	1090	1310
2186	Blaine	7.47	216	399	580	800	1240	1480
2187	Blaine	4.61	160	300	438	609	941	1150
2189	Blaine	5.32	175	327	477	661	1020	1240

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2191	Blaine	7.64	219	405	587	811	1250	1500
2198	Blaine	4.81	165	308	450	624	964	1170
2200	Blaine	7.84	223	411	596	823	1270	1520
2202	Blaine	16.00	346	628	901	1230	1900	2230
2208	Blaine	20.06	398	718	1030	1400	2160	2520
2210	Blaine	22.88	431	777	1110	1510	2330	2700
2213	Blaine	30.00	510	912	1300	1760	2720	3120
2218	Blaine	122.01	1210	2100	2920	3880	5990	6610
2223	Blaine	10.00	259	475	687	944	1460	1730
2225	Blaine	16.47	352	639	917	1250	1930	2270
2227	Blaine	17.16	361	655	939	1280	1980	2320
2229	Blaine	21.42	414	747	1070	1450	2240	2610
2232	Blaine	20.24	400	722	1030	1410	2180	2530
2233	Blaine	29.44	504	902	1280	1740	2690	3090
2237	Blaine	33.56	546	975	1380	1870	2890	3310
2240	Blaine	57.50	761	1340	1890	2540	3920	4420
2243	Blaine	6.09	190	354	515	713	1100	1330
2246	Blaine	8.92	241	444	643	885	1370	1630
2247	Blaine	25.27	458	824	1170	1590	2460	2850
2250	Blaine	3.47	135	253	372	519	802	984
2251	Blaine	7.79	222	410	594	820	1270	1520
2253	Blaine	9.20	246	452	654	901	1390	1660
2258	Blaine	13.79	315	575	827	1130	1750	2060
2259	Blaine	14.11	320	583	838	1150	1770	2090
2262	Blaine	4.00	147	275	404	562	868	1060
2264	Blaine	4.63	161	301	440	611	944	1150

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2265	Blaine	38.53	595	1060	1500	2020	3120	3570
2267	Blaine	48.01	681	1210	1700	2290	3540	4010
2273	Blaine	27.81	486	872	1240	1680	2600	3000
2277	Blaine	4.99	168	314	459	637	985	1200
2279	Blaine	6.26	194	360	524	725	1120	1350
2282	Blaine	5.49	179	333	485	672	1040	1260
2284	Blaine	8.31	231	425	617	850	1310	1570
2286	Blaine	9.09	244	449	650	895	1380	1650
2290	Blaine	14.13	320	583	839	1150	1780	2090
2291	Blaine	16.05	346	629	903	1230	1900	2230
2293	Blaine	24.92	455	817	1160	1580	2440	2830
2297	Blaine	1.51	80.8	155	230	325	502	632
2299	Blaine	1.96	94.7	180	267	376	581	725
2301	Blaine	35.41	565	1010	1430	1930	2980	3410
2304	Blaine	42.68	634	1130	1590	2140	3310	3770
2308	Blaine	20.49	403	728	1040	1420	2190	2550
2794	Blaine	1.45	78.6	151	224	317	490	617
2797	Blaine	7.33	214	395	574	792	1220	1470
2800	Blaine	15.96	345	627	900	1230	1900	2230
2801	Blaine	17.28	363	657	942	1290	1990	2320
2804	Blaine	20.21	399	721	1030	1400	2160	2530
2808	Blaine	25.93	466	837	1190	1620	2500	2890
2810	Blaine	12.87	302	552	795	1090	1680	1990
2812	Blaine	13.04	305	556	801	1100	1700	2000
2814	Blaine	15.20	335	609	875	1200	1850	2170
2816	Blaine	11.34	280	512	738	1010	1560	1860

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2818	Blaine	13.99	318	580	834	1140	1760	2080
3124	Blaine	9.61	252	464	671	923	1430	1700
3212	Blaine	4.93	167	312	456	633	978	1190
3215	Blaine	4.99	169	314	459	638	985	1200
3217	Blaine	10.52	267	490	707	971	1500	1780
3218	Blaine	22.31	425	765	1090	1490	2300	2660
3222	Blaine	46.21	665	1180	1670	2240	3460	3930
3223	Blaine	8.34	231	427	618	852	1320	1570
3225	Blaine	5.85	186	345	503	697	1080	1300
3228	Blaine	6.49	198	368	535	739	1140	1380
3231	Blaine	26.72	475	852	1210	1640	2530	2930
3233	Blaine	9.41	249	458	663	912	1410	1680
3235	Blaine	10.63	269	493	711	977	1510	1790
3362	Blaine	5.28	175	325	475	658	1020	1230
3377	Blaine	4.61	161	300	439	610	942	1150
3379	Blaine	5.09	171	318	464	644	995	1210
4027	Blaine	103.52	1090	1900	2660	3540	5470	6060
4028	Blaine	101.08	1080	1880	2620	3490	5390	5980
4029	Blaine	67.10	837	1470	2070	2770	4280	4800
4030	Blaine	64.63	818	1440	2020	2710	4190	4710
4031	Blaine	19.50	391	706	1010	1380	2130	2480
4032	Blaine	18.36	376	682	976	1330	2050	2400
4033	Blaine	27.04	478	858	1220	1660	2560	2950
4034	Blaine	26.01	467	838	1190	1620	2500	2890
4035	Blaine	52.50	720	1270	1790	2410	3720	4210
4036	Blaine	51.07	708	1250	1760	2370	3660	4150

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4037	Blaine	40.44	613	1090	1540	2080	3210	3660
4038	Blaine	36.40	574	1020	1450	1960	3030	3460
4112	Blaine	127.50	794	1290	1740	2250	3480	3720
4113	Blaine	122.66	775	1260	1700	2200	3400	3640
4114	Blaine	15.89	344	626	898	1230	1900	2220
4115	Blaine	10.19	262	481	694	954	1470	1750
4166	Blaine	33.80	549	979	1390	1880	2900	3330
4167	Blaine	28.44	493	884	1260	1700	2630	3030
4168	Blaine	15.91	345	626	898	1230	1900	2220
4169	Blaine	31.85	529	946	1340	1820	2810	3220
4170	Blaine	11.23	278	509	734	1010	1560	1850
4171	Blaine	41.42	622	1110	1560	2110	3260	3710
4172	Blaine	21.94	420	758	1080	1470	2270	2640
4173	Blaine	7.10	210	388	563	778	1200	1440
4174	Blaine	16.01	346	628	902	1230	1900	2230
4175	Blaine	19.11	386	698	999	1360	2100	2450
4176	Blaine	28.56	494	886	1260	1710	2640	3040
4177	Blaine	37.71	587	1050	1480	2000	3090	3530
4178	Blaine	7.53	217	401	582	804	1240	1490
4179	Blaine	26.04	467	839	1190	1620	2500	2890
4200	Blaine	24.91	454	817	1160	1580	2440	2830
4201	Blaine	16.58	353	641	920	1260	1950	2270
4393	Blaine	4.11	149	280	410	571	882	1080
4394	Blaine	1.34	74.9	144	214	303	468	592
4395	Blaine	1.62	84.3	161	240	338	522	656
4396	Blaine	2.03	96.7	184	273	383	592	739

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4397	Blaine	4.03	148	277	405	565	873	1070
4398	Blaine	7.13	210	389	564	780	1210	1450
4399	Blaine	6.00	189	351	511	708	1090	1320
4400	Blaine	4.14	150	281	412	574	887	1080
4401	Blaine	2.47	109	207	305	428	662	820
4402	Blaine	4.90	167	311	454	631	974	1180
4403	Blaine	6.10	191	354	516	714	1100	1330
4404	Blaine	8.27	230	424	615	848	1310	1570
4427	Blaine	2.57	112	212	313	438	677	838
4428	Blaine	2.93	121	229	337	471	728	899
4449	Blaine	17.51	366	663	950	1300	2010	2340
4450	Blaine	1.96	94.7	180	267	376	581	725
4451	Blaine	1.24	71.3	137	205	290	448	567
4452	Blaine	1.01	62.7	121	182	258	398	508
4453	Blaine	1.33	74.5	143	213	302	466	589
4454	Blaine	1.95	94.4	180	266	375	579	723
4455	Blaine	1.32	74.3	143	213	301	465	588
4456	Blaine	1.31	73.9	142	212	300	464	585
4457	Blaine	1.41	77.4	149	221	313	484	609
4468	Blaine	5.69	183	340	495	686	1060	1280
4469	Blaine	2.57	112	212	313	438	677	839
4482	Blaine	4.68	162	302	442	614	949	1150
4494	Blaine	17.75	369	668	957	1310	2020	2360
4495	Blaine	1.09	65.9	127	190	270	417	529
6017	Blaine	132.90	1280	2210	3070	4070	6290	6920
6018	Blaine	165.03	1460	2510	3480	4600	7110	7770

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
6019	Blaine	15.46	339	615	884	1210	1870	2190
6020	Blaine	1.87	92.1	176	260	366	566	708
6021	Blaine	24.19	446	803	1140	1550	2400	2780
6033	Blaine	11.50	282	516	745	1020	1580	1870
6034	Blaine	1.74	88	168	250	352	544	681
6035	Blaine	18.41	377	683	978	1330	2050	2400
6045	Blaine	3.42	133	251	369	515	795	976
6046	Blaine	3.99	147	275	404	562	868	1060
6047	Blaine	3.36	132	249	365	510	787	968
PB001	Blaine	0.19	22.7	45.6	70	102	157	210
PB002	Blaine	0.29	28.8	57.4	87.5	126	195	259
PB003	Blaine	0.73	51.6	101	151	216	333	428
PB004	Blaine	3.42	134	251	369	515	796	977
PB005	Blaine	1.33	74.4	143	213	301	466	588
PB006	Blaine	0.67	49	95.8	144	206	318	410
PB007	Blaine	0.18	21.8	43.8	67.3	97.8	151	203
PB008	Blaine	0.86	56.9	111	166	236	364	466
PB009	Blaine	0.58	44.6	87.4	132	189	291	377
PB010	Blaine	0.70	50.2	98.1	147	210	324	419
PB011	Blaine	0.52	41.5	81.6	123	177	273	355
PB012	Blaine	1.07	65.2	126	188	267	412	525
PB013	Blaine	3.36	132	249	365	510	787	968
PB014	Blaine	0.10	14.9	30.4	47.2	69.2	107	146
PB015	Blaine	4.38	155	291	426	592	915	1110
PB016	Blaine	18.46	378	684	979	1330	2050	2410
PB017	Blaine	5.43	178	331	482	668	1030	1250

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PB018	Blaine	1.67	85.8	164	244	343	531	666
PB019	Blaine	0.36	33.3	66	100	144	223	293
PB020	Blaine	4.32	154	289	422	588	908	1110
PB021	Blaine	4.88	166	310	453	629	972	1180
PB022	Blaine	3.65	139	261	383	534	826	1010
PB023	Blaine	27.78	486	872	1240	1680	2600	3000
PB024	Blaine	2.00	95.8	182	270	380	587	733
PB025	Blaine	42.65	633	1120	1590	2140	3310	3770
PB026	Blaine	42.29	630	1120	1580	2130	3290	3750
PB027	Blaine	0.33	31.8	63.2	96.1	138	214	282
PB028	Blaine	17.09	360	653	936	1280	1980	2310
PB029	Blaine	9.40	249	458	662	911	1410	1680
PB030	Blaine	1.86	91.7	175	259	365	564	705
PB031	Blaine	1.79	89.7	171	254	358	553	692
487	Hill	1.70	86.8	166	246	347	537	673
489	Hill	1.33	74.6	143	214	302	467	590
490	Hill	1.02	63.2	122	183	259	400	511
493	Hill	96.67	649	1060	1430	1850	2860	3080
494	Hill	85.69	602	987	1330	1730	2670	2880
495	Hill	74.88	526	859	1160	1500	2320	2510
496	Hill	10.80	271	497	718	986	1520	1810
497	Hill	62.67	461	754	1020	1320	2040	2210
498	Hill	5.71	183	341	496	688	1060	1290
499	Hill	56.95	426	696	937	1220	1880	2050
501	Hill	55.96	422	689	928	1210	1870	2030
502	Hill	1.01	63	122	182	259	400	509

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
503	Hill	55.21	411	669	900	1170	1810	1960
509	Hill	15.07	333	606	871	1190	1840	2160
510	Hill	12.40	295	540	778	1070	1650	1950
511	Hill	2.67	115	217	320	448	692	856
514	Hill	3.81	143	268	393	547	846	1040
521	Hill	12.59	298	545	784	1070	1650	1960
523	Hill	9.61	253	464	671	923	1430	1700
525	Hill	127.53	749	1210	1620	2090	3230	3440
529	Hill	4.40	156	292	427	594	918	1120
530	Hill	10.28	263	483	698	959	1480	1760
531	Hill	5.88	186	347	505	699	1080	1310
532	Hill	14.84	330	601	863	1180	1820	2140
533	Hill	1796.89	5270	8460	11200	14400	22300	23100
534	Hill	1787.66	5260	8440	11200	14300	22200	23100
535	Hill	0.34	32.2	63.8	97	140	216	284
536	Hill	1787.59	5260	8440	11200	14300	22200	23100
538	Hill	1784.32	5250	8440	11200	14300	22200	23000
539	Hill	1760.99	5210	8370	11100	14200	22000	22900
540	Hill	23.32	436	786	1120	1520	2350	2730
542	Hill	1717.86	5130	8240	10900	14000	21700	22600
543	Hill	20.59	404	730	1040	1420	2190	2550
544	Hill	1697.27	5090	8180	10900	13900	21600	22400
546	Hill	1695.80	5080	8180	10800	13900	21600	22400
547	Hill	1667.72	5030	8100	10800	13800	21400	22200
548	Hill	28.08	489	877	1250	1690	2610	3010
553	Hill	1661.38	5020	8080	10700	13800	21400	22100

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
554	Hill	1661.10	5020	8080	10700	13800	21400	22100
555	Hill	0.65	48.1	94	142	202	312	403
556	Hill	1654.94	5010	8060	10700	13700	21300	22100
557	Hill	16.29	350	635	911	1240	1920	2250
558	Hill	1638.65	4980	8020	10700	13600	21100	21900
560	Hill	1637.85	4980	8020	10700	13600	21100	21900
561	Hill	7.83	223	411	596	822	1270	1520
562	Hill	1635.15	4980	8010	10700	13600	21100	21900
564	Hill	1610.18	4930	7940	10600	13500	21000	21700
565	Hill	1610.04	4930	7940	10600	13500	21000	21700
566	Hill	0.38	34.3	67.9	103	148	229	301
568	Hill	1607.26	4920	7930	10600	13500	21000	21700
569	Hill	989.56	4350	7200	9730	12600	19500	20400
570	Hill	617.69	2490	4080	5520	7210	11200	12200
571	Hill	4.96	168	313	457	635	981	1190
572	Hill	1.23	70.9	137	204	288	445	564
573	Hill	603.92	2440	4020	5460	7140	11100	12200
574	Hill	539.59	2260	3750	5100	6680	10400	11500
575	Hill	64.33	563	942	1290	1690	2610	2860
578	Hill	527.93	2230	3700	5040	6610	10300	11400
579	Hill	538.76	2260	3740	5100	6680	10400	11500
580	Hill	10.83	272	498	719	987	1520	1810
582	Hill	972.61	4300	7120	9640	12400	19200	20200
583	Hill	932.91	4200	6950	9410	12100	18800	19700
584	Hill	39.70	606	1080	1530	2060	3180	3630
585	Hill	39.03	599	1070	1510	2040	3150	3590

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NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
586	Hill	31.99	530	948	1350	1820	2810	3230
587	Hill	7.04	208	386	560	774	1200	1440
589	Hill	21.96	420	758	1080	1470	2270	2640
590	Hill	1.48	79.6	153	227	321	496	624
591	Hill	20.47	403	727	1040	1420	2190	2540
593	Hill	17.48	365	662	949	1290	1990	2340
594	Hill	4.36	155	290	424	590	912	1110
595	Hill	12.56	298	544	783	1070	1650	1960
598	Hill	925.34	4180	6910	9360	12100	18700	19600
599	Hill	11.35	280	512	739	1010	1560	1860
600	Hill	913.99	4150	6860	9300	12000	18600	19500
606	Hill	886.61	4040	6710	9090	11800	18200	19200
607	Hill	854.51	3940	6560	8900	11600	17900	18800
608	Hill	32.10	531	950	1350	1820	2810	3240
610	Hill	806.93	3820	6350	8610	11200	17300	18300
611	Hill	680.12	2930	4800	6450	8330	12900	13600
612	Hill	97.75	1060	1840	2570	3420	5290	5870
613	Hill	97.71	1060	1840	2570	3420	5290	5870
614	Hill	23.93	443	798	1140	1550	2390	2770
615	Hill	74.15	891	1560	2190	2930	4520	5070
626	Hill	14.61	327	595	855	1170	1810	2120
628	Hill	75.59	717	1310	1920	2670	4230	5250
629	Hill	66.76	664	1220	1780	2490	3940	4910
630	Hill	4.95	132	262	405	587	973	1290
631	Hill	61.80	651	1190	1740	2410	3810	4710
634	Hill	31.61	526	941	1340	1810	2800	3210

Milk River Watershed Hydrologic Analysis: Volume 1

HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
635	Hill	21.76	418	754	1080	1460	2260	2630
636	Hill	20.97	409	738	1050	1430	2210	2580
637	Hill	1.15	68	131	196	278	429	545
639	Hill	11.68	285	521	751	1030	1590	1880
640	Hill	4.87	166	310	453	629	971	1180
641	Hill	7.75	221	408	592	817	1260	1510
644	Hill	17.55	366	664	951	1300	2010	2340
645	Hill	0.18	22	44.3	67.9	98.8	153	205
646	Hill	16.63	354	643	922	1260	1950	2280
648	Hill	16.60	354	642	921	1260	1950	2270
649	Hill	2.44	108	206	304	426	658	816
650	Hill	14.15	321	584	839	1150	1780	2090
655	Hill	659.76	2870	4710	6340	8190	12700	13400
656	Hill	654.10	2860	4690	6310	8150	12600	13300
657	Hill	5.66	182	339	494	685	1060	1280
659	Hill	650.33	2850	4670	6290	8130	12600	13300
660	Hill	3.76	142	266	390	543	839	1030
662	Hill	646.63	2840	4650	6270	8100	12500	13200
663	Hill	1.44	78.4	151	224	316	488	616
664	Hill	645.19	2830	4650	6260	8090	12500	13200
666	Hill	642.84	2830	4640	6250	8070	12500	13200
667	Hill	637.25	2810	4610	6220	8030	12400	13100
668	Hill	5.55	180	335	488	677	1050	1270
677	Hill	635.47	2810	4610	6210	8020	12400	13100
678	Hill	452.32	2260	3740	5080	6610	10200	11000
679	Hill	214.68	1720	2940	4050	5340	8250	8950

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
680	Hill	196.41	1620	2790	3850	5080	7840	8530
681	Hill	143.72	1340	2310	3210	4260	6580	7220
682	Hill	55.04	741	1310	1840	2470	3820	4320
684	Hill	104.27	1100	1910	2670	3550	5480	6080
685	Hill	40.36	612	1090	1540	2080	3210	3660
686	Hill	59.25	776	1370	1920	2580	3990	4490
688	Hill	38.26	592	1050	1490	2010	3110	3560
689	Hill	2.06	97.6	186	275	386	597	744
690	Hill	35.72	568	1010	1430	1940	3000	3430
693	Hill	450.97	2250	3740	5070	6600	10200	10900
694	Hill	11.33	279	512	738	1010	1560	1850
695	Hill	439.63	2220	3680	5000	6510	10100	10800
704	Hill	143.51	1330	2300	3200	4240	6560	7220
705	Hill	114.22	988	1680	2320	3050	4720	5190
706	Hill	29.28	502	899	1280	1730	2670	3080
707	Hill	278.05	1660	2790	3820	5030	7820	8600
708	Hill	9.22	246	453	655	902	1390	1660
709	Hill	268.83	1620	2730	3750	4930	7670	8440
710	Hill	268.79	1620	2730	3750	4930	7670	8440
711	Hill	7.59	218	403	585	808	1250	1500
712	Hill	261.19	1590	2680	3690	4860	7550	8320
713	Hill	7.89	224	413	599	826	1280	1530
714	Hill	6.69	202	374	544	752	1160	1400
715	Hill	1.20	69.8	135	201	284	439	557
718	Hill	7.12	210	388	564	779	1200	1450
720	Hill	0.55	43.3	85	128	184	284	368

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
721	Hill	6.77	203	377	548	757	1170	1410
723	Hill	259.97	1590	2670	3680	4850	7530	8310
724	Hill	239.73	1510	2540	3510	4630	7200	7990
725	Hill	17.68	368	666	955	1300	2010	2350
730	Hill	237.81	1500	2530	3490	4610	7170	7950
731	Hill	25.14	457	822	1170	1590	2460	2840
732	Hill	220.31	1650	2840	3960	5260	6930	9120
734	Hill	112.61	979	1670	2300	3030	4690	5150
735	Hill	110.27	966	1650	2270	2990	4630	5090
736	Hill	2.33	105	200	296	415	641	796
738	Hill	94.38	879	1500	2070	2740	4240	4680
739	Hill	14.04	319	581	836	1140	1760	2080
740	Hill	80.33	794	1370	1890	2510	3880	4320
743	Hill	17.30	363	658	943	1290	1990	2330
744	Hill	0.18	21.7	43.6	66.9	97.4	150	202
745	Hill	17.12	361	654	937	1280	1980	2310
748	Hill	219.93	1650	2840	3960	5260	6920	9110
749	Hill	209.71	1590	2750	3840	5110	6600	8890
750	Hill	10.22	262	481	695	955	1480	1750
756	Hill	199.37	1350	2280	3160	4190	6520	7280
757	Hill	30.08	511	914	1300	1760	2720	3130
758	Hill	169.29	1110	1880	2610	3460	5410	6100
759	Hill	168.93	1110	1880	2600	3460	5390	6090
760	Hill	1.42	77.4	149	221	313	483	609
761	Hill	166.90	1100	1870	2590	3440	5360	6050
763	Hill	159.61	1070	1820	2530	3360	5260	5950

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
764	Hill	5.83	186	345	503	696	1080	1300
765	Hill	155.14	1050	1800	2490	3310	5170	5870
767	Hill	143.45	1000	1710	2390	3190	4990	5720
768	Hill	10.24	263	482	696	957	1480	1760
769	Hill	133.21	960	1650	2300	3080	4830	5540
774	Hill	16.65	354	643	922	1260	1950	2280
777	Hill	26.75	475	852	1210	1650	2550	2940
778	Hill	18.71	381	689	987	1340	2070	2420
779	Hill	45.46	659	1170	1650	2220	3430	3900
788	Hill	76.29	906	1590	2230	2980	4600	5140
789	Hill	14.31	323	588	845	1160	1790	2100
790	Hill	86.33	978	1710	2390	3190	4930	5500
800	Hill	29.51	505	904	1280	1740	2690	3090
801	Hill	37.41	584	1040	1470	1990	3070	3510
802	Hill	7.90	224	413	599	826	1280	1530
814	Hill	29.08	500	896	1270	1730	2670	3070
815	Hill	7.95	225	414	601	829	1280	1530
816	Hill	8.78	239	440	637	877	1360	1620
817	Hill	16.83	357	647	928	1270	1960	2290
818	Hill	7.88	223	412	598	825	1270	1530
819	Hill	7.27	212	393	571	788	1220	1460
821	Hill	0.61	46	90.1	136	194	300	388
830	Hill	33.49	545	974	1380	1870	2890	3310
831	Hill	1.23	71.2	137	205	290	448	566
832	Hill	34.74	558	995	1410	1910	2950	3380
833	Hill	35.80	568	1010	1440	1940	3000	3430

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
836	Hill	0.07	12.5	25.7	40	58.9	91	125
837	Hill	47.61	678	1200	1690	2280	3520	4000
838	Hill	47.79	679	1200	1700	2280	3520	4000
842	Hill	74.51	893	1570	2200	2940	4540	5080
843	Hill	25.99	467	838	1190	1620	2500	2890
844	Hill	48.48	685	1210	1710	2300	3550	4040
847	Hill	22.99	432	779	1110	1510	2330	2710
848	Hill	9.94	258	473	684	941	1450	1730
849	Hill	5.68	182	339	495	686	1060	1280
850	Hill	3.81	143	268	393	547	846	1040
851	Hill	1.20	70	135	201	285	440	558
854	Hill	5.41	177	330	481	667	1030	1250
856	Hill	5.24	174	324	472	655	1010	1230
858	Hill	14.07	319	582	837	1140	1760	2080
859	Hill	13.92	317	578	832	1140	1760	2070
860	Hill	9.08	244	449	649	894	1380	1650
861	Hill	4.84	165	309	451	626	967	1180
863	Hill	6.83	204	379	550	761	1180	1410
864	Hill	2.87	120	226	333	466	720	889
865	Hill	3.96	146	274	402	559	864	1060
875	Hill	21.12	410	741	1060	1440	2220	2590
878	Hill	17.40	364	660	946	1290	1990	2330
879	Hill	10.99	274	502	725	995	1540	1820
880	Hill	5.73	184	341	497	689	1070	1290
881	Hill	29.72	507	907	1290	1750	2700	3110
882	Hill	15.42	338	614	882	1210	1870	2190

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
883	Hill	45.13	656	1160	1640	2210	3410	3880
885	Hill	6.24	193	359	523	723	1120	1350
886	Hill	15.12	334	607	872	1190	1840	2160
887	Hill	8.88	240	443	641	883	1360	1630
889	Hill	54.38	736	1300	1830	2460	3800	4290
890	Hill	61.76	796	1400	1970	2640	4080	4590
891	Hill	116.18	1180	2040	2840	3770	5820	6440
892	Hill	58.68	771	1360	1910	2570	3970	4470
893	Hill	25.60	462	830	1180	1610	2490	2870
894	Hill	33.08	541	967	1370	1860	2870	3290
897	Hill	90.93	1010	1760	2460	3290	5080	5650
898	Hill	122.71	1220	2110	2930	3890	6010	6630
899	Hill	213.65	1710	2930	4040	5320	8220	8920
900	Hill	7.83	223	411	596	822	1270	1520
901	Hill	220.01	1740	2980	4110	5410	8360	9060
902	Hill	252.14	1900	3230	4450	5850	9040	9750
905	Hill	1.23	71	137	204	289	446	565
907	Hill	35.08	561	1000	1420	1920	2970	3390
908	Hill	32.56	536	958	1360	1840	2840	3260
909	Hill	11.97	289	529	762	1040	1610	1910
910	Hill	20.59	404	730	1040	1420	2190	2550
911	Hill	11.92	288	527	760	1040	1610	1910
912	Hill	4.92	167	312	455	632	977	1190
913	Hill	7.08	209	387	562	776	1200	1440
916	Hill	9.06	244	448	649	893	1380	1650
917	Hill	2.43	108	205	302	424	655	813

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
918	Hill	6.63	201	372	541	748	1160	1390
923	Hill	10.54	267	490	708	972	1500	1780
924	Hill	16.05	346	629	903	1230	1910	2230
925	Hill	27.21	480	861	1230	1660	2560	2960
930	Hill	37.50	585	1040	1480	1990	3070	3520
931	Hill	297.45	2100	3560	4900	6420	9920	10700
932	Hill	259.95	1930	3290	4530	5950	9190	9910
933	Hill	258.31	1920	3280	4510	5930	9160	9880
934	Hill	2.16	101	191	283	397	614	764
935	Hill	256.62	1920	3270	4490	5900	9120	9840
937	Hill	304.28	2130	3610	4960	6500	10000	10800
938	Hill	6.47	198	367	534	738	1140	1370
939	Hill	297.80	2100	3570	4900	6420	9920	10700
941	Hill	305.63	2130	3620	4970	6520	10100	10800
943	Hill	12.21	293	535	771	1060	1640	1930
944	Hill	2.21	102	194	286	402	621	773
945	Hill	14.42	324	591	849	1160	1790	2110
947	Hill	15.30	336	612	878	1200	1850	2180
950	Hill	957.46	4320	7140	9630	12400	19200	19900
951	Hill	955.13	4310	7130	9620	12400	19200	19900
952	Hill	947.52	4290	7090	9570	12400	19200	19800
953	Hill	7.61	219	404	586	809	1250	1500
955	Hill	947.31	4290	7090	9570	12300	19000	19800
956	Hill	3.56	137	257	377	526	813	998
957	Hill	944.21	4280	7080	9560	12300	19000	19800
959	Hill	944.00	4280	7080	9550	12300	19000	19800

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
960	Hill	2.84	119	225	331	463	716	884
961	Hill	940.77	4270	7060	9540	12300	19000	19700
963	Hill	940.69	4270	7060	9530	12300	19000	19700
964	Hill	927.31	4230	7000	9460	12200	18800	19600
965	Hill	12.03	290	530	764	1050	1620	1920
966	Hill	11.22	278	509	734	1010	1560	1840
967	Hill	4.23	152	285	417	581	898	1090
968	Hill	6.96	207	383	556	769	1190	1430
972	Hill	14.93	331	603	866	1180	1820	2150
1129	Hill	49.48	694	1230	1730	2330	3600	4080
1130	Hill	23.76	441	794	1130	1540	2380	2760
1131	Hill	18.21	375	678	972	1320	2050	2390
1132	Hill	6.70	202	374	544	753	1160	1400
1135	Hill	112.90	1150	2000	2790	3710	5730	6340
1176	Hill	7.60	218	404	586	808	1250	1500
1177	Hill	4.97	168	314	458	636	983	1190
1178	Hill	2.08	98.3	187	277	389	601	749
1341	Hill	0.18	21.8	43.8	67.3	97.8	151	203
1347	Hill	608.36	2450	4040	5490	7170	11200	12200
1348	Hill	615.77	2480	4070	5510	7190	11200	12200
1349	Hill	610.74	2470	4050	5500	7160	11200	12200
1375	Hill	166.06	1100	1860	2580	3430	5360	6080
1400	Hill	0.40	35.8	70.7	107	154	238	312
1401	Hill	2.11	99.1	189	279	392	606	755
1402	Hill	1.83	90.7	173	257	361	558	699
1651	Hill	1785.45	5250	8440	11200	14300	22200	23000

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
1652	Hill	1785.26	5250	8440	11200	14300	22200	23000
1676	Hill	90.81	1010	1760	2460	3280	5070	5650
2319	Hill	81.11	941	1650	2310	3080	4760	5310
2321	Hill	3.21	128	242	356	497	768	945
2323	Hill	7.53	217	401	583	804	1240	1490
2325	Hill	21.45	414	748	1070	1450	2240	2610
2328	Hill	6.00	189	351	511	707	1090	1320
2330	Hill	29.66	506	906	1290	1740	2690	3100
2334	Hill	5.14	172	320	467	648	1000	1210
2336	Hill	6.41	197	365	531	734	1130	1370
2338	Hill	7.47	216	399	580	800	1240	1480
2340	Hill	10.89	273	500	721	990	1530	1820
2344	Hill	14.04	319	581	836	1140	1760	2080
2346	Hill	15.71	342	621	892	1220	1880	2210
2348	Hill	49.10	691	1220	1730	2320	3580	4060
2353	Hill	17.84	370	670	960	1310	2020	2360
2355	Hill	24.19	446	803	1150	1550	2390	2780
2357	Hill	27.99	488	876	1250	1690	2610	3010
2361	Hill	4.06	148	278	408	567	876	1070
2363	Hill	7.69	220	406	590	814	1260	1510
2365	Hill	8.95	242	445	644	887	1370	1630
2367	Hill	2.26	103	196	290	407	629	783
2370	Hill	5.09	171	318	464	644	996	1210
2372	Hill	4.48	158	295	431	600	926	1130
2374	Hill	5.21	173	322	471	653	1010	1220
2378	Hill	1.86	91.8	175	260	365	564	706

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2381	Hill	7.59	218	403	585	808	1250	1500
2383	Hill	7.37	214	396	576	795	1230	1470
2385	Hill	4.81	165	308	450	624	964	1170
2391	Hill	5.16	172	321	468	650	1000	1220
2395	Hill	7.57	218	403	584	807	1250	1490
2400	Hill	3.47	135	254	372	519	802	985
2401	Hill	4.18	151	283	414	577	891	1090
2403	Hill	6.40	196	364	530	733	1130	1370
2405	Hill	8.06	226	418	606	836	1290	1550
2407	Hill	13.13	306	559	804	1100	1700	2010
2409	Hill	14.97	332	604	867	1190	1830	2150
2412	Hill	11.66	284	520	750	1030	1590	1880
2413	Hill	9.97	258	474	685	942	1460	1730
2415	Hill	10.55	267	491	708	973	1500	1780
2418	Hill	2.48	109	208	306	429	663	823
2423	Hill	2.75	117	221	325	455	704	870
2425	Hill	1.33	74.4	143	213	301	466	588
2428	Hill	4.87	166	310	452	628	971	1180
2431	Hill	3.23	129	243	357	498	770	947
2432	Hill	1.04	64.2	124	186	263	407	518
2434	Hill	0.72	50.8	99.1	149	213	329	423
2436	Hill	0.13	17.4	35.3	54.5	79.6	123	167
2442	Hill	1.80	89.9	172	255	358	553	693
2446	Hill	3.97	146	275	402	560	865	1060
2449	Hill	3.18	128	241	354	494	764	940
2452	Hill	2.68	115	218	321	449	694	858

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2455	Hill	6.28	194	360	525	726	1120	1350
2456	Hill	5.55	180	335	488	677	1050	1270
2458	Hill	5.12	171	319	466	646	998	1210
2459	Hill	7.41	215	397	577	797	1230	1480
2465	Hill	6.76	203	376	547	757	1170	1410
2467	Hill	8.21	229	422	612	844	1300	1560
2469	Hill	7.52	217	401	582	803	1240	1490
2472	Hill	4.45	157	294	430	597	922	1120
2474	Hill	4.14	150	281	412	574	887	1080
2477	Hill	4.25	153	286	418	582	899	1100
2480	Hill	5.77	184	343	499	692	1070	1290
2482	Hill	7.26	212	393	570	787	1220	1460
2484	Hill	8.51	234	432	625	862	1330	1590
2488	Hill	24.16	446	802	1140	1550	2390	2780
2490	Hill	16.48	352	639	917	1250	1930	2270
2494	Hill	27.43	482	865	1230	1670	2580	2980
2497	Hill	27.15	479	860	1220	1660	2560	2960
2499	Hill	32.29	533	953	1350	1830	2830	3250
2505	Hill	91.90	1020	1770	2480	3310	5110	5680
2507	Hill	96.92	1050	1830	2560	3410	5270	5850
2509	Hill	108.81	1130	1960	2730	3640	5620	6220
2511	Hill	13.64	313	571	822	1120	1740	2050
2514	Hill	70.83	866	1520	2130	2850	4400	4940
2517	Hill	18.62	380	687	984	1340	2070	2420
2519	Hill	23.57	439	791	1130	1530	2360	2740
2522	Hill	8.23	229	423	613	846	1310	1560

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2523	Hill	11.47	282	515	743	1020	1580	1870
2526	Hill	14.11	320	583	838	1150	1780	2080
2528	Hill	17.00	359	651	933	1270	1960	2300
2529	Hill	2.86	120	226	333	466	720	888
2531	Hill	7.34	214	395	574	793	1230	1470
2532	Hill	3.42	134	251	369	515	796	978
2534	Hill	8.37	232	428	620	854	1320	1580
2542	Hill	38.33	593	1060	1490	2020	3120	3560
2544	Hill	16.23	349	634	909	1240	1920	2250
2546	Hill	19.41	390	705	1010	1370	2120	2470
2547	Hill	18.73	381	690	987	1350	2090	2430
2552	Hill	22.08	422	760	1090	1480	2290	2650
2554	Hill	23.71	441	793	1130	1540	2380	2750
2555	Hill	25.22	458	823	1170	1590	2460	2850
2557	Hill	3.89	145	271	397	554	856	1050
2560	Hill	4.52	159	296	433	603	932	1130
2562	Hill	11.64	284	520	750	1030	1590	1880
2564	Hill	6.15	192	356	518	717	1110	1340
2566	Hill	7.48	216	400	580	801	1240	1490
2568	Hill	9.69	254	466	674	927	1430	1710
2570	Hill	15.12	334	607	872	1190	1840	2160
2572	Hill	1.54	81.6	156	232	328	507	638
2574	Hill	2.48	110	208	307	430	664	823
2576	Hill	2.95	122	230	339	474	732	903
2582	Hill	7.45	216	399	579	800	1240	1480
2583	Hill	8.71	238	438	634	873	1350	1610

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2586	Hill	17.66	368	666	954	1300	2010	2350
2589	Hill	23.64	440	792	1130	1530	2360	2750
2591	Hill	24.79	453	815	1160	1580	2440	2820
2595	Hill	53.18	726	1280	1810	2430	3750	4240
2597	Hill	104.89	1100	1920	2680	3560	5500	6100
2599	Hill	118.21	1190	2060	2870	3810	5890	6500
2601	Hill	133.35	1280	2210	3080	4080	6300	6930
2603	Hill	35.40	564	1010	1430	1930	2980	3410
2607	Hill	49.47	694	1230	1730	2330	3600	4080
2609	Hill	54.31	735	1300	1830	2460	3800	4290
2612	Hill	203.87	1360	2320	3200	4240	6590	7370
2618	Hill	7.36	214	396	575	794	1230	1470
2619	Hill	7.93	224	414	600	828	1280	1530
2621	Hill	9.26	247	454	656	904	1400	1660
2623	Hill	12.12	291	533	767	1050	1620	1920
2626	Hill	13.40	310	565	813	1110	1720	2030
2628	Hill	15.11	334	607	872	1190	1840	2160
2636	Hill	101.58	919	1570	2160	2860	4430	4860
2644	Hill	13.00	304	555	799	1090	1680	2000
2646	Hill	12.14	292	533	768	1050	1620	1920
2658	Hill	15.69	342	621	891	1220	1880	2210
2660	Hill	21.25	412	743	1060	1440	2220	2600
2662	Hill	25.63	462	831	1180	1610	2490	2870
2663	Hill	28.51	494	885	1260	1710	2640	3040
2666	Hill	19.66	393	710	1020	1380	2130	2490
2670	Hill	8.26	230	424	615	847	1310	1570

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2672	Hill	11.70	285	522	752	1030	1590	1890
2674	Hill	13.62	313	571	821	1120	1730	2050
2676	Hill	14.70	328	597	858	1170	1810	2130
2679	Hill	5.60	181	337	491	680	1050	1270
2683	Hill	1.57	82.5	158	235	331	511	643
2685	Hill	2.31	105	199	294	413	638	792
2686	Hill	3.04	124	234	345	482	745	918
2689	Hill	4.96	168	313	458	635	981	1190
2690	Hill	22.67	429	773	1100	1500	2320	2690
2694	Hill	29.36	503	901	1280	1730	2680	3090
2699	Hill	17.78	369	669	958	1310	2020	2360
2701	Hill	11.95	289	528	761	1040	1610	1910
2703	Hill	53.00	724	1280	1800	2420	3740	4230
2705	Hill	55.38	744	1310	1850	2480	3840	4330
2706	Hill	18.71	381	689	987	1340	2070	2430
2709	Hill	23.09	434	781	1110	1510	2330	2710
2710	Hill	16.17	348	632	907	1240	1920	2240
2715	Hill	29.10	500	896	1270	1730	2670	3070
2717	Hill	46.95	531	985	1460	2040	3240	4090
2721	Hill	59.80	643	1170	1710	2370	3740	4620
2725	Hill	3.77	118	232	357	515	854	1110
2729	Hill	23.44	438	788	1120	1530	2360	2740
2731	Hill	25.57	462	830	1180	1600	2470	2870
2735	Hill	27.74	486	871	1240	1680	2600	2990
2737	Hill	64.27	424	683	912	1180	1820	1960
2741	Hill	70.91	457	736	982	1270	1960	2110

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2745	Hill	80.63	510	822	1100	1420	2190	2350
2746	Hill	90.43	557	897	1200	1550	2390	2560
2749	Hill	91.34	565	911	1220	1570	2430	2600
2752	Hill	13.57	312	570	819	1120	1730	2040
2753	Hill	13.35	309	564	812	1110	1710	2020
2756	Hill	19.22	387	700	1000	1370	2120	2460
2757	Hill	16.12	347	631	905	1240	1920	2240
2759	Hill	24.98	455	818	1170	1580	2440	2830
2764	Hill	17.75	369	668	957	1310	2020	2360
2765	Hill	34.07	551	984	1400	1890	2920	3340
2769	Hill	39.19	601	1070	1510	2040	3150	3600
2774	Hill	43.09	637	1130	1600	2150	3320	3790
2775	Hill	35.93	289	470	631	823	1270	1390
2778	Hill	38.00	302	492	662	863	1330	1450
2780	Hill	43.05	336	547	736	958	1480	1610
2781	Hill	46.97	360	586	788	1030	1590	1720
2789	Hill	67.75	495	810	1090	1420	2190	2380
2790	Hill	9.08	244	449	649	894	1380	1650
3128	Hill	24.18	446	803	1140	1550	2390	2780
3131	Hill	32.73	538	961	1360	1840	2840	3270
3134	Hill	2.99	123	232	341	477	737	909
3137	Hill	6.96	207	383	557	769	1190	1430
3140	Hill	9.00	242	446	646	889	1370	1640
3142	Hill	11.07	275	505	728	1000	1540	1830
3143	Hill	14.30	323	588	845	1160	1790	2100
3146	Hill	18.13	374	677	969	1320	2040	2380

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3148	Hill	19.40	389	704	1010	1370	2120	2470
3149	Hill	25.95	466	837	1190	1620	2500	2890
3151	Hill	3.36	112	220	339	487	807	1050
3153	Hill	1.82	90.4	173	256	360	556	697
3155	Hill	0.99	62.2	120	180	256	395	504
3160	Hill	1.02	63.4	123	183	260	402	512
3162	Hill	16.50	352	640	917	1250	1930	2270
3164	Hill	29.10	500	896	1270	1730	2670	3070
3168	Hill	21.60	416	751	1070	1460	2260	2620
3169	Hill	6.75	203	376	547	756	1170	1410
3172	Hill	10.51	267	489	707	971	1500	1780
3181	Hill	20.80	407	734	1050	1430	2210	2570
3183	Hill	6.13	191	355	517	716	1110	1340
3185	Hill	4.95	168	313	457	634	980	1190
3187	Hill	7.33	214	395	574	792	1220	1470
3189	Hill	13.29	308	562	809	1110	1710	2020
3191	Hill	30.75	517	926	1320	1780	2750	3160
3192	Hill	3.68	140	263	385	537	830	1020
3194	Hill	3.10	126	237	348	487	752	927
3196	Hill	4.44	157	293	429	597	922	1120
3200	Hill	2.14	100	190	281	395	611	761
3202	Hill	3.58	137	258	379	528	816	1000
3204	Hill	6.43	197	366	532	736	1140	1370
3205	Hill	2.27	104	197	291	408	631	784
3209	Hill	5.15	172	320	468	649	1000	1220
3210	Hill	0.07	12	24.8	38.6	56.8	87.8	121

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3355	Hill	4.06	148	278	408	568	877	1070
3357	Hill	2.35	106	201	297	417	644	800
3358	Hill	1.16	68.4	132	197	279	431	547
3359	Hill	1.67	85.8	164	244	343	530	666
3360	Hill	11.75	286	523	754	1030	1590	1890
3382	Hill	7.55	218	402	583	805	1240	1490
3383	Hill	2.23	102	195	288	404	624	777
4039	Hill	6.75	203	376	547	756	1170	1410
4040	Hill	1.23	71.1	137	204	289	447	566
4041	Hill	7.70	220	407	590	814	1260	1510
4042	Hill	74.13	891	1560	2190	2930	4530	5070
4043	Hill	66.10	830	1460	2050	2740	4230	4760
4044	Hill	61.90	797	1400	1970	2640	4080	4600
4045	Hill	60.80	788	1390	1950	2620	4050	4560
4046	Hill	924.44	4230	6990	9440	12200	18800	19500
4047	Hill	921.43	4220	6980	9420	12200	18800	19500
4048	Hill	921.42	4220	6980	9420	12200	18800	19500
4049	Hill	914.93	4200	6950	9380	12100	18700	19400
4050	Hill	913.10	4190	6940	9370	12100	18700	19400
4051	Hill	909.07	4180	6920	9350	12100	18700	19400
4052	Hill	4.95	168	313	457	634	980	1190
4053	Hill	6.55	199	370	538	743	1150	1380
4054	Hill	29.73	507	908	1290	1750	2700	3110
4055	Hill	27.97	488	875	1250	1690	2610	3010
4056	Hill	49.48	694	1230	1730	2330	3600	4080
4057	Hill	46.49	668	1180	1670	2250	3470	3950

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4058	Hill	7.77	221	409	593	819	1270	1520
4059	Hill	8.76	238	439	636	876	1350	1620
4062	Hill	91.08	1010	1760	2470	3290	5080	5660
4063	Hill	92.94	1020	1790	2500	3330	5140	5720
4064	Hill	89.44	1000	1750	2440	3250	5020	5600
4065	Hill	87.11	984	1720	2400	3210	4960	5520
4066	Hill	131.53	953	1640	2280	3060	4800	5510
4069	Hill	162.79	1080	1840	2550	3390	5300	6020
4070	Hill	160.09	1070	1820	2530	3370	5260	5960
4073	Hill	0.09	14.2	29.1	45.1	66.2	102	140
4074	Hill	22.25	424	764	1090	1480	2290	2660
4075	Hill	8.60	236	434	629	867	1340	1600
4076	Hill	5.07	170	317	463	643	994	1210
4077	Hill	79.88	792	1360	1880	2500	3860	4310
4078	Hill	75.28	763	1310	1820	2420	3740	4180
4079	Hill	280.40	1670	2800	3850	5050	7850	8600
4080	Hill	283.53	1680	2820	3870	5080	7890	8650
4081	Hill	4.08	149	279	409	569	879	1070
4082	Hill	0.31	30.2	60.1	91.5	132	204	269
4083	Hill	201.71	1650	2830	3910	5150	7960	8650
4084	Hill	197.14	1630	2790	3860	5090	7860	8550
4085	Hill	51.26	709	1250	1770	2380	3670	4160
4086	Hill	9.39	249	458	662	911	1410	1680
4087	Hill	49.30	692	1230	1730	2320	3580	4070
4088	Hill	46.82	671	1190	1680	2260	3490	3960
4089	Hill	6.52	199	368	536	741	1140	1380

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4090	Hill	2.17	101	192	283	398	615	766
4095	Hill	1746.83	5180	8330	11000	14200	22000	22800
4096	Hill	1727.97	5150	8270	11000	14100	21900	22700
4097	Hill	1726.83	5140	8270	11000	14100	21900	22600
4098	Hill	1718.80	5130	8250	10900	14000	21700	22600
4099	Hill	1760.50	5210	8370	11100	14200	22000	22900
4100	Hill	1759.11	5200	8360	11100	14200	22000	22900
4101	Hill	21.78	418	754	1080	1470	2270	2630
4102	Hill	20.51	403	728	1040	1420	2190	2550
4103	Hill	1787.38	5260	8440	11200	14300	22200	23100
4104	Hill	1790.05	5260	8450	11200	14400	22300	23100
4105	Hill	1788.13	5260	8440	11200	14300	22200	23100
4106	Hill	41.00	321	523	703	916	1420	1540
4107	Hill	42.04	331	539	726	946	1460	1590
4108	Hill	67.41	493	807	1090	1420	2190	2370
4109	Hill	65.33	473	773	1040	1350	2090	2260
4110	Hill	95.33	643	1050	1420	1840	2840	3050
4111	Hill	86.77	607	994	1340	1740	2690	2900
4141	Hill	70.55	864	1520	2130	2850	4400	4930
4142	Hill	55.08	741	1310	1840	2480	3820	4320
4180	Hill	6.94	207	382	556	768	1190	1430
4181	Hill	87.00	983	1720	2400	3200	4940	5520
4182	Hill	7.21	212	391	568	785	1210	1460
4183	Hill	19.09	386	698	998	1360	2100	2450
4184	Hill	5.94	188	349	508	703	1090	1310
4186	Hill	6.08	190	354	515	713	1100	1330

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4187	Hill	22.75	430	774	1100	1500	2320	2690
4188	Hill	4.69	162	303	443	615	951	1160
4189	Hill	19.40	390	704	1010	1370	2120	2470
4190	Hill	25.99	466	838	1190	1620	2500	2890
4191	Hill	46.32	666	1180	1670	2240	3470	3940
4192	Hill	18.38	377	682	976	1330	2060	2400
4193	Hill	13.71	314	573	824	1130	1750	2050
4194	Hill	9.52	251	461	667	918	1420	1690
4195	Hill	46.09	664	1180	1660	2240	3460	3930
4196	Hill	54.06	733	1290	1820	2450	3790	4280
4197	Hill	57.46	761	1340	1890	2540	3920	4420
4198	Hill	18.97	384	695	995	1360	2100	2440
4292	Hill	19.55	391	708	1010	1380	2130	2480
4293	Hill	910.22	4130	6850	9270	12000	18600	19500
4294	Hill	890.66	4080	6770	9160	11800	18300	19200
4295	Hill	1.49	80	153	228	322	497	627
4296	Hill	49.53	694	1230	1730	2330	3600	4080
4297	Hill	51.08	708	1250	1770	2370	3660	4150
4298	Hill	45.97	663	1180	1660	2230	3450	3920
4299	Hill	43.89	645	1140	1620	2180	3360	3830
4300	Hill	6.26	194	360	523	724	1120	1350
4301	Hill	670.30	2900	4760	6400	8270	12800	13500
4302	Hill	664.02	2890	4730	6370	8220	12700	13400
4303	Hill	5.48	179	332	485	672	1040	1260
4304	Hill	3.66	139	262	384	535	827	1010
4305	Hill	644.99	2830	4650	6260	8090	12500	13200

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4306	Hill	642.84	2830	4640	6250	8070	12500	13200
4307	Hill	1.94	94.2	180	266	374	578	722
4308	Hill	7.46	216	399	579	800	1240	1480
4309	Hill	9.62	253	464	671	924	1430	1700
4310	Hill	1.06	64.9	126	188	266	411	523
4311	Hill	1.38	76.3	147	218	308	477	602
4312	Hill	238.95	1500	2540	3500	4620	7190	7970
4313	Hill	237.93	1500	2530	3490	4610	7170	7960
4316	Hill	51.94	715	1260	1780	2390	3700	4190
4317	Hill	8.15	228	421	610	841	1300	1560
4318	Hill	45.84	662	1170	1660	2230	3450	3920
4320	Hill	7.94	224	414	601	828	1280	1530
4323	Hill	5.91	187	348	506	701	1080	1310
4325	Hill	2.35	106	201	297	417	644	800
4326	Hill	13.00	304	555	799	1090	1680	2000
4327	Hill	4.46	157	294	430	598	924	1130
4328	Hill	8.51	234	432	625	862	1330	1590
4329	Hill	2.76	117	221	326	456	705	871
4330	Hill	6.59	200	371	539	746	1150	1390
4331	Hill	37.34	583	1040	1470	1990	3070	3510
4333	Hill	7.42	215	398	578	798	1230	1480
4335	Hill	12.98	304	555	798	1090	1690	1990
4342	Hill	28.51	494	885	1260	1710	2640	3040
4343	Hill	27.39	482	864	1230	1670	2580	2970
4344	Hill	3.77	142	266	390	544	840	1030
4358	Hill	8.54	235	433	627	864	1330	1590

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4359	Hill	2.50	110	208	307	431	666	825
4360	Hill	18.86	383	692	991	1350	2090	2440
4361	Hill	8.02	226	417	604	833	1290	1540
4362	Hill	4.02	147	276	405	564	871	1060
4363	Hill	15.17	335	609	874	1190	1850	2170
4364	Hill	2.05	97.2	185	274	385	595	742
4365	Hill	4.64	161	301	440	612	946	1150
4366	Hill	3.14	127	239	351	491	759	934
4367	Hill	3.81	143	268	393	547	845	1030
4368	Hill	10.68	269	494	713	980	1510	1800
4370	Hill	3.11	126	237	349	488	754	928
4371	Hill	4.57	160	298	436	606	936	1140
4372	Hill	22.52	427	770	1100	1490	2300	2680
4374	Hill	5.51	179	334	486	674	1040	1260
4376	Hill	2.89	120	227	334	468	723	892
4377	Hill	2.23	103	195	288	405	626	778
4378	Hill	1.05	64.3	124	186	264	408	518
4379	Hill	1.46	79	152	226	319	492	620
4380	Hill	2.01	96.2	183	271	381	589	735
4381	Hill	2.17	101	192	283	398	615	766
4382	Hill	1.84	91.2	174	258	363	561	702
4383	Hill	2.14	100	190	281	395	610	761
4384	Hill	4.90	167	311	454	631	975	1180
4385	Hill	1.11	66.7	129	192	273	422	535
4386	Hill	1.49	79.8	153	228	322	497	626
4387	Hill	11.56	283	518	747	1020	1580	1870

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4388	Hill	1.21	70.2	135	202	286	442	560
4389	Hill	2.95	122	230	339	474	732	903
4390	Hill	3.00	123	233	342	478	739	911
4391	Hill	7.91	224	413	599	827	1280	1530
4392	Hill	4.03	148	277	405	565	873	1070
4405	Hill	2.98	123	232	341	476	736	908
4406	Hill	9.97	258	474	685	942	1460	1730
4407	Hill	1.50	80.2	154	229	323	499	628
4408	Hill	1.81	90	172	255	359	555	694
4429	Hill	2.08	98.1	187	276	388	599	748
4430	Hill	8.03	226	417	604	834	1290	1540
4431	Hill	2.52	111	210	309	433	669	830
4432	Hill	6.45	197	366	533	737	1140	1370
4433	Hill	2.16	100	191	282	397	613	763
4458	Hill	5.89	187	347	505	700	1080	1310
4459	Hill	1.09	66	127	190	270	417	530
4460	Hill	2.91	121	228	336	470	726	897
4461	Hill	2.03	96.7	184	273	383	592	739
4462	Hill	5.64	182	338	493	683	1060	1280
4463	Hill	2.32	105	199	295	413	639	794
4464	Hill	3.53	136	256	376	524	810	993
4465	Hill	4.59	160	299	437	608	939	1140
4466	Hill	1.33	74.7	144	214	302	467	590
4476	Hill	1.11	66.7	129	192	273	422	536
4477	Hill	1.82	90.5	173	256	361	558	698
4478	Hill	2.34	105	200	296	415	641	797

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4480	Hill	41.14	619	1100	1560	2100	3240	3700
4481	Hill	1.04	63.9	124	185	262	405	516
4496	Hill	2.33	105	200	296	415	641	796
4497	Hill	11.05	275	504	727	999	1540	1830
4501	Hill	290.06	1980	3380	4680	6190	8450	10600
4502	Hill	146.05	1300	2240	3110	4120	6240	6990
4506	Hill	14.50	325	592	851	1160	1800	2120
4507	Hill	2.02	96.4	184	272	382	591	737
4508	Hill	0.44	37.6	74.3	112	162	250	326
4509	Hill	22.35	425	766	1090	1490	2300	2670
4510	Hill	22.79	430	775	1110	1500	2320	2700
4511	Hill	22.79	430	775	1110	1500	2320	2700
4512	Hill	1.53	81.1	156	231	326	504	634
4513	Hill	24.32	448	805	1150	1560	2410	2790
4514	Hill	0.34	31.9	63.3	96.2	139	214	282
4515	Hill	24.36	448	806	1150	1560	2410	2790
4516	Hill	24.70	452	813	1160	1570	2430	2810
4517	Hill	24.89	454	817	1160	1580	2440	2820
4518	Hill	27.85	487	873	1240	1680	2600	3000
4519	Hill	2.96	122	231	339	474	733	904
4520	Hill	27.85	487	873	1240	1680	2600	3000
4521	Hill	1.26	72.2	139	207	293	453	573
4523	Hill	30.06	510	913	1300	1760	2720	3130
4524	Hill	29.69	506	907	1290	1750	2700	3100
4525	Hill	0.37	33.9	67.1	102	147	227	298
4526	Hill	2.80	118	223	329	460	711	878

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4527	Hill	11.07	276	505	728	1000	1540	1830
6001	Hill	436.10	2540	4290	5880	7710	10900	12900
6022	Hill	75.35	481	776	1040	1340	2070	2220
6023	Hill	45.84	662	1170	1660	2230	3450	3920
6024	Hill	7.86	223	412	597	824	1270	1520
6025	Hill	5.22	173	323	471	654	1010	1230
6026	Hill	9.23	246	453	656	902	1390	1660
6027	Hill	47.58	677	1200	1690	2280	3520	4000
6032	Hill	2.12	99.3	189	279	393	607	756
6040	Hill	10.42	265	487	703	966	1490	1770
6041	Hill	19.20	387	700	1000	1360	2100	2460
6042	Hill	932.49	4200	6950	9410	12100	18800	19700
6043	Hill	10.36	265	485	701	963	1490	1770
6044	Hill	89.31	999	1740	2440	3250	5020	5600
PH001	Hill	24.83	453	815	1160	1580	2440	2820
PH002	Hill	6.26	194	360	524	724	1120	1350
PH003	Hill	0.40	35.3	69.9	106	152	236	309
PH004	Hill	3.74	141	265	389	542	837	1030
PH005	Hill	0.28	28.7	57.3	87.3	126	195	258
PH006	Hill	1.69	86.4	165	245	346	534	670
PH007	Hill	1.30	73.4	141	211	298	460	582
PH008	Hill	0.24	25.7	51.5	78.6	114	176	234
PH009	Hill	0.50	41	80.6	122	175	270	351
PH010	Hill	1.33	74.5	143	213	302	467	589
PH011	Hill	3.77	142	266	390	544	840	1030
PH012	Hill	1.01	62.8	122	182	258	399	508

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH013	Hill	0.62	46.5	91	137	196	303	391
PH014	Hill	3.03	124	234	344	481	743	916
PH015	Hill	20.50	403	728	1040	1420	2190	2550
PH016	Hill	51.03	707	1250	1760	2370	3660	4150
PH017	Hill	6.02	189	351	512	709	1090	1320
PH018	Hill	1.35	75.1	144	215	304	470	593
PH019	Hill	3.06	125	235	346	484	747	921
PH020	Hill	2.67	115	217	320	448	692	856
PH021	Hill	6.87	205	380	552	763	1180	1420
PH022	Hill	2.75	117	221	325	455	703	869
PH023	Hill	7.49	217	400	581	802	1240	1490
PH024	Hill	0.88	57.7	112	168	239	369	472
PH025	Hill	3.23	129	243	357	499	771	948
PH026	Hill	36.59	576	1030	1450	1960	3030	3470
PH027	Hill	48.35	684	1210	1710	2300	3550	4030
PH028	Hill	75.52	901	1580	2210	2960	4570	5120
PH029	Hill	79.10	927	1620	2270	3040	4700	5240
PH030	Hill	23.17	435	783	1120	1520	2350	2720
PH031	Hill	2.20	102	193	286	401	620	771
PH032	Hill	0.47	39.2	77.2	117	168	259	337
PH033	Hill	3.45	134	252	370	517	799	981
PH034	Hill	2.23	103	195	288	405	626	778
PH035	Hill	20.17	399	721	1030	1400	2160	2520
PH036	Hill	1.31	73.7	142	211	299	462	584
PH037	Hill	0.21	23.7	47.5	72.7	106	164	218
PH038	Hill	3.00	123	232	342	478	738	910

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH039	Hill	3.75	141	265	389	542	837	1030
PH040	Hill	5.49	179	333	485	673	1040	1260
PH041	Hill	0.34	31.9	63.4	96.4	139	215	283
PH042	Hill	0.36	33.3	66.1	100	145	223	293
PH043	Hill	0.51	41.1	80.8	122	175	270	352
PH044	Hill	0.42	36.7	72.5	110	158	244	319
PH045	Hill	8.95	242	445	644	887	1370	1630
PH046	Hill	34.84	559	997	1410	1910	2950	3380
PH047	Hill	15.27	336	611	877	1200	1850	2180
PH048	Hill	22.28	424	765	1090	1480	2290	2660
PH049	Hill	0.45	38.2	75.2	114	164	253	330
PH050	Hill	15.70	342	621	891	1220	1880	2210
PH051	Hill	19.87	395	714	1020	1390	2150	2500
PH052	Hill	3066.86	9710	15500	21400	29000	41600	59100
PH053	Hill	0.35	32.8	65	98.8	142	220	289
PH054	Hill	3.29	130	246	361	504	778	957
PH055	Hill	54.25	734	1300	1830	2450	3790	4290
PH056	Hill	2.82	118	224	330	462	714	881
PH057	Hill	0.63	46.8	91.6	138	197	304	394
PH058	Hill	19.21	387	700	1000	1360	2100	2460
PH059	Hill	0.80	54.6	106	159	227	351	450
PH060	Hill	16.48	352	639	917	1250	1930	2270
PH061	Hill	27.06	478	858	1220	1660	2560	2950
PH062	Hill	15.54	340	617	886	1210	1870	2200
PH063	Hill	29.75	507	908	1290	1750	2700	3110
PH064	Hill	9.20	246	452	654	901	1390	1660

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH065	Hill	10.53	267	490	707	972	1500	1780
PH066	Hill	13.98	318	580	833	1140	1760	2070
PH067	Hill	74.52	758	1310	1810	2410	3730	4150
PH068	Hill	9.60	252	464	671	922	1420	1700
PH069	Hill	16.67	355	644	923	1260	1950	2280
PH070	Hill	15.54	340	617	886	1210	1870	2200
PH071	Hill	18.50	378	685	980	1340	2070	2410
PH072	Hill	10.35	264	485	701	963	1490	1770
PH073	Hill	64.66	819	1440	2020	2710	4190	4710
PH074	Hill	65.01	821	1440	2030	2720	4200	4720
PH075	Hill	1.50	80.1	154	229	323	499	628
PH076	Hill	0.31	30.5	60.7	92.4	133	205	272
PH077	Hill	30.03	510	913	1300	1760	2720	3120
PH078	Hill	27.66	485	869	1240	1680	2590	2990
PH079	Hill	30.96	520	930	1320	1790	2770	3170
PH080	Hill	70.38	862	1510	2120	2840	4390	4930
PH081	Hill	3.52	136	255	375	523	808	992
PH082	Hill	4.72	163	304	444	617	954	1160
PH083	Hill	6.09	190	354	515	713	1100	1330
PH084	Hill	10.55	267	491	708	973	1500	1790
PH085	Hill	13.59	313	570	820	1120	1730	2040
PH086	Hill	29.63	506	906	1290	1740	2690	3100
PH087	Hill	20.88	408	736	1050	1430	2210	2570
PH088	Hill	20.06	398	718	1030	1400	2160	2520
PH089	Hill	11.27	279	510	736	1010	1560	1850
PH090	Hill	2.98	122	231	340	476	735	907

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH091	Hill	4.43	157	293	428	596	921	1120
PH092	Hill	1.81	90.2	172	255	360	556	696
PH093	Hill	6.95	207	383	556	768	1190	1430
PH094	Hill	31.17	522	933	1330	1790	2770	3190
PH095	Hill	65.23	823	1450	2030	2720	4200	4730
PH096	Hill	63.54	810	1420	2000	2680	4140	4660
PH097	Hill	46.37	667	1180	1670	2250	3480	3940
PH098	Hill	46.72	670	1190	1680	2260	3490	3960
PH099	Hill	49.37	693	1230	1730	2330	3600	4080
PH100	Hill	59.06	774	1360	1920	2570	3970	4490
PH101	Hill	104.28	1100	1910	2670	3550	5480	6080
PH102	Hill	116.73	1180	2050	2850	3780	5840	6460
PH103	Hill	131.10	1270	2190	3050	4040	6240	6870
PH104	Hill	143.59	1340	2310	3210	4250	6570	7210
PH105	Hill	196.45	1620	2790	3850	5080	7840	8530
PH106	Hill	201.76	1650	2830	3910	5150	7960	8650
PH107	Hill	203.62	1660	2850	3930	5180	8000	8700
PH108	Hill	280.06	1670	2800	3840	5050	7850	8590
PH109	Hill	3.10	126	237	349	487	752	927
PH110	Hill	3.75	141	265	389	543	839	1030
PH111	Hill	0.16	20.5	41.4	63.7	92.7	143	193
PH112	Hill	1.20	70	135	201	285	440	558
PH113	Hill	29.51	505	904	1280	1740	2690	3090
PH114	Hill	4.50	158	296	433	601	929	1130
PH115	Hill	4.77	164	306	447	621	959	1170
PH116	Hill	5.84	186	345	503	697	1080	1300

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH117	Hill	47.25	674	1200	1690	2270	3510	3980
PH118	Hill	45.19	656	1160	1640	2210	3410	3890
PH119	Hill	27.85	487	873	1240	1680	2600	3000
PH120	Hill	10.06	260	477	689	947	1460	1740
PH121	Hill	6.30	194	361	525	727	1120	1350
PH122	Hill	89.32	999	1740	2440	3250	5020	5600
PH123	Hill	6.24	193	359	523	723	1120	1350
PH124	Hill	59.56	778	1370	1930	2590	4000	4510
PH125	Hill	60.97	789	1390	1960	2620	4050	4560
PH126	Hill	48.52	686	1210	1710	2300	3550	4040
PH127	Hill	6.54	199	369	537	743	1150	1380
PH128	Hill	10.36	265	485	701	963	1490	1770
PH129	Hill	5.97	188	350	509	705	1090	1320
PH130	Hill	14.50	325	592	851	1160	1800	2120
PH131	Hill	13.31	309	563	810	1110	1710	2020
PH132	Hill	12.62	299	546	786	1080	1670	1960
PH133	Hill	8.06	226	418	606	836	1290	1550
PH134	Hill	66.76	664	1220	1780	2490	3940	4910
PH135	Hill	73.83	703	1290	1880	2630	4160	5190
PH136	Hill	11.85	287	526	758	1040	1610	1900
PH137	Hill	11.94	289	528	761	1040	1610	1910
PH138	Hill	18.98	384	695	995	1360	2100	2440
PH139	Hill	29.74	507	908	1290	1750	2700	3110
PH140	Hill	0.52	41.5	81.6	123	177	273	355
PH141	Hill	0.53	42	82.6	125	179	276	359
PH142	Hill	670.73	2900	4760	6400	8270	12800	13500

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH143	Hill	676.78	2920	4780	6430	8310	12900	13600
PH144	Hill	73.88	889	1560	2190	2920	4510	5060
PH145	Hill	811.37	3830	6370	8640	11200	17300	18300
PH146	Hill	15.16	334	608	874	1190	1840	2170
PH147	Hill	55.13	742	1310	1840	2480	3830	4320
PH148	Hill	846.12	3920	6520	8850	11500	17800	18700
PH149	Hill	851.00	3930	6550	8880	11500	17800	18800
PH150	Hill	6.65	201	373	542	750	1160	1390
PH151	Hill	7.34	214	395	574	793	1230	1470
PH152	Hill	932.49	4200	6950	9410	12100	18800	19700
PH153	Hill	0.92	59.2	115	172	245	378	483
PH154	Hill	28.45	493	884	1260	1700	2630	3030
PH155	Hill	974.02	4300	7130	9640	12400	19200	20200
PH156	Hill	5.63	181	338	492	682	1050	1270
PH157	Hill	6.65	201	373	542	750	1160	1390
PH158	Hill	15.97	345	627	900	1230	1900	2230
PH159	Hill	1.48	79.7	153	227	321	496	625
PH160	Hill	4.52	158	296	433	602	930	1130
PH161	Hill	2.35	106	201	297	416	643	799
PH162	Hill	27.33	481	863	1230	1670	2580	2970
PH163	Hill	19.77	394	712	1020	1390	2150	2500
PH164	Hill	77.95	499	806	1080	1390	2150	2310
PH165	Hill	0.76	52.9	103	155	221	341	438
PH166	Hill	13.58	313	570	820	1120	1730	2040
PH167	Hill	0.23	25.4	50.8	77.7	113	175	232
PH168	Hill	17.55	366	664	951	1300	2010	2340

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PH169	Hill	8.71	238	438	634	873	1350	1610
PH170	Hill	1.99	95.5	182	270	379	586	731
PH171	Hill	50.80	705	1250	1760	2360	3650	4140
234	Phillips	345.36	2300	3900	5340	6980	10800	11500
235	Phillips	321.87	2200	3740	5120	6710	10400	11100
236	Phillips	23.49	438	789	1130	1530	2360	2740
249	Phillips	1143.27	4860	8010	10800	13900	21600	22200
250	Phillips	17.13	361	654	938	1280	1980	2310
251	Phillips	1126.13	4810	7940	10700	13800	21500	22000
253	Phillips	1125.08	4810	7940	10700	13800	21500	22000
254	Phillips	1102.92	4760	7860	10600	13700	21400	21900
255	Phillips	22.15	423	762	1090	1480	2290	2650
262	Phillips	2238.51	7290	11800	15800	20100	31100	31400
266	Phillips	8.16	228	421	610	842	1300	1560
267	Phillips	8.66	237	436	631	870	1340	1610
269	Phillips	95.12	1040	1810	2530	3370	5210	5790
271	Phillips	1011.96	4470	7380	9950	12800	19800	20500
276	Phillips	984.20	4390	7260	9790	12600	19500	20200
277	Phillips	975.61	4370	7220	9740	12600	19500	20100
278	Phillips	8.59	236	434	629	866	1340	1600
283	Phillips	6.59	200	371	539	746	1150	1390
287	Phillips	94.76	1040	1810	2520	3360	5200	5780
288	Phillips	94.65	1040	1810	2520	3360	5190	5770
289	Phillips	85.05	969	1690	2370	3160	4890	5450
290	Phillips	9.37	249	457	661	910	1410	1680
298	Phillips	24.67	452	812	1160	1570	2430	2810

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
316	Phillips	49.62	695	1230	1740	2330	3610	4090
317	Phillips	44.92	654	1160	1640	2210	3410	3870
318	Phillips	4.76	164	306	447	620	958	1170
321	Phillips	39.58	605	1080	1520	2050	3170	3620
326	Phillips	24.85	454	816	1160	1580	2440	2820
327	Phillips	12.91	303	553	796	1090	1680	1990
328	Phillips	11.94	289	528	761	1040	1610	1910
341	Phillips	220.46	1740	2980	4120	5420	8370	9070
361	Phillips	27.53	483	867	1230	1670	2580	2980
376	Phillips	25.20	458	823	1170	1590	2460	2840
378	Phillips	14.47	325	592	850	1160	1790	2110
379	Phillips	21.50	415	749	1070	1450	2240	2610
381	Phillips	2.60	113	213	315	441	681	843
383	Phillips	113.44	1160	2010	2800	3720	5750	6360
390	Phillips	6.83	204	379	550	761	1180	1410
391	Phillips	24.12	445	801	1140	1550	2400	2780
392	Phillips	17.50	365	662	949	1290	2000	2340
397	Phillips	11.74	286	523	753	1030	1600	1890
398	Phillips	0.37	33.8	66.9	102	146	226	297
399	Phillips	11.37	280	513	740	1010	1570	1860
400	Phillips	11.32	279	511	738	1010	1560	1850
401	Phillips	2.89	120	227	335	468	723	893
404	Phillips	8.43	233	429	622	857	1320	1580
405	Phillips	25.56	462	830	1180	1600	2480	2870
406	Phillips	26.56	473	849	1210	1640	2530	2920
407	Phillips	1.00	62.5	121	181	257	397	506

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
415	Phillips	33.97	550	982	1390	1880	2900	3340
417	Phillips	12.97	304	554	798	1090	1680	1990
418	Phillips	32.52	536	957	1360	1840	2840	3260
419	Phillips	19.54	391	707	1010	1380	2130	2480
420	Phillips	34.98	560	1000	1420	1920	2970	3390
428	Phillips	3.80	143	268	392	547	845	1030
430	Phillips	2.27	104	197	291	409	631	785
434	Phillips	0.48	39.5	77.8	118	169	261	340
436	Phillips	13.69	314	572	823	1130	1740	2050
438	Phillips	4.54	159	297	435	604	934	1140
439	Phillips	9.52	251	461	667	918	1420	1690
440	Phillips	4.94	167	312	456	633	979	1190
442	Phillips	271.15	1980	3370	4640	6090	9410	10100
451	Phillips	136.17	1300	2240	3110	4130	6380	7010
452	Phillips	267.51	1970	3350	4600	6040	9330	10100
453	Phillips	131.33	1270	2190	3050	4040	6240	6880
458	Phillips	125.17	1230	2130	2970	3940	6090	6700
459	Phillips	129.56	1260	2180	3030	4010	6200	6830
460	Phillips	9.84	256	471	680	935	1450	1720
461	Phillips	9.22	246	453	655	902	1390	1660
462	Phillips	6.44	197	366	532	736	1140	1370
463	Phillips	2.67	115	217	320	448	692	856
464	Phillips	3.38	132	249	366	511	789	970
465	Phillips	0.14	18.9	38.2	58.8	85.8	133	179
466	Phillips	3.19	128	241	354	495	765	941
473	Phillips	114.46	1160	2020	2820	3740	5780	6390

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
474	Phillips	106.46	1110	1940	2700	3590	5550	6150
475	Phillips	8.00	225	416	603	832	1290	1540
476	Phillips	57.39	760	1340	1890	2530	3910	4420
477	Phillips	36.68	577	1030	1460	1970	3040	3480
478	Phillips	106.34	1110	1930	2700	3590	5550	6140
480	Phillips	55.70	747	1320	1860	2490	3850	4350
481	Phillips	9.08	244	449	649	894	1380	1650
482	Phillips	46.62	669	1190	1670	2250	3480	3950
1165	Phillips	0.30	29.8	59.2	90.2	130	201	266
1166	Phillips	1.97	95	181	268	377	583	728
1327	Phillips	0.35	32.6	64.7	98.4	142	219	288
1329	Phillips	28.25	491	880	1250	1700	2620	3020
1330	Phillips	0.40	35.6	70.3	107	153	237	310
1331	Phillips	27.85	487	873	1240	1680	2600	3000
1625	Phillips	2.35	106	201	297	416	643	799
1666	Phillips	0.07	12.2	25.1	39.1	57.6	89	123
2097	Phillips	2.25	103	196	290	407	628	781
2100	Phillips	8.53	235	432	626	863	1330	1590
2104	Phillips	5.90	187	347	506	701	1080	1310
2106	Phillips	6.92	206	382	555	767	1190	1420
2110	Phillips	10.28	263	483	698	959	1480	1760
2112	Phillips	14.01	319	580	835	1140	1760	2080
2114	Phillips	15.85	344	625	896	1220	1880	2220
2117	Phillips	27.77	486	872	1240	1680	2600	3000
2118	Phillips	26.42	471	846	1200	1630	2520	2920
2121	Phillips	14.51	326	593	852	1160	1790	2120

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2132	Phillips	96.24	1050	1820	2550	3390	5240	5820
2134	Phillips	100.98	1080	1880	2620	3490	5390	5980
2820	Phillips	11.84	287	525	757	1040	1600	1900
2823	Phillips	12.53	297	543	782	1070	1650	1960
2824	Phillips	1.69	86.3	165	245	345	533	669
2826	Phillips	2.23	102	195	288	404	624	777
2828	Phillips	2.42	108	205	302	424	654	812
2829	Phillips	2.78	118	222	327	458	708	875
2832	Phillips	12.40	295	540	777	1070	1650	1950
2834	Phillips	13.56	312	569	819	1120	1730	2040
2837	Phillips	2.85	119	225	332	465	718	886
2839	Phillips	3.21	128	242	356	497	768	945
2840	Phillips	4.36	155	290	425	591	913	1110
2843	Phillips	4.88	166	310	453	630	973	1180
2845	Phillips	5.55	180	335	488	677	1050	1270
2846	Phillips	0.72	50.9	99.2	149	213	329	423
2848	Phillips	5.47	178	332	484	671	1040	1260
2850	Phillips	5.47	178	332	484	672	1040	1260
2852	Phillips	6.43	197	365	532	735	1140	1370
2854	Phillips	10.16	261	480	693	953	1470	1750
2856	Phillips	12.16	292	534	769	1050	1620	1930
2858	Phillips	8.25	230	424	614	847	1310	1570
2860	Phillips	8.16	228	421	610	841	1300	1560
2862	Phillips	6.40	197	365	530	734	1130	1370
2864	Phillips	7.49	216	400	581	801	1240	1490
2867	Phillips	1.72	87.3	167	248	349	539	676

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2868	Phillips	1.94	94	179	265	373	576	721
2869	Phillips	0.16	20.6	41.5	63.8	92.9	144	193
2871	Phillips	0.23	25.6	51.2	78.3	113	175	233
2874	Phillips	0.21	24.1	48.4	74.1	107	166	222
2878	Phillips	10.81	271	497	718	986	1520	1810
2880	Phillips	4.81	165	307	449	624	964	1170
2883	Phillips	9.75	255	468	677	931	1440	1710
2888	Phillips	1.74	87.8	168	249	351	542	680
2890	Phillips	3.59	137	258	379	529	817	1000
2892	Phillips	4.82	165	308	450	625	966	1170
2894	Phillips	4.20	151	284	415	578	893	1090
2896	Phillips	6.55	199	369	537	743	1150	1380
2898	Phillips	7.55	218	402	583	805	1240	1490
2900	Phillips	46.11	664	1180	1660	2240	3460	3930
2903	Phillips	35.73	568	1010	1440	1940	2990	3430
2906	Phillips	11.96	289	528	761	1040	1610	1910
2915	Phillips	33.28	543	970	1380	1860	2870	3300
2917	Phillips	3.60	138	259	380	530	819	1000
2918	Phillips	4.93	167	312	456	633	978	1190
2919	Phillips	4.25	153	286	419	582	899	1100
2923	Phillips	16.54	353	641	919	1250	1930	2270
2925	Phillips	18.66	380	688	985	1340	2070	2420
2928	Phillips	20.51	403	728	1040	1420	2190	2550
2930	Phillips	1236.96	5090	8380	11300	14600	22700	23100
2934	Phillips	11.12	276	506	730	1000	1540	1840
2936	Phillips	8.43	233	429	622	857	1320	1580

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2938	Phillips	13.21	307	560	807	1100	1700	2010
2940	Phillips	16.99	359	651	933	1270	1960	2300
2942	Phillips	18.88	383	693	992	1350	2090	2440
2945	Phillips	21.01	409	738	1060	1440	2220	2580
2947	Phillips	9.20	246	452	654	901	1390	1660
2949	Phillips	7.90	224	413	599	826	1280	1530
2951	Phillips	12.47	296	542	780	1070	1650	1950
3071	Phillips	9.88	257	472	682	937	1450	1720
3074	Phillips	15.54	340	617	886	1210	1870	2200
3076	Phillips	11.44	281	515	742	1020	1580	1860
3077	Phillips	14.10	320	583	838	1150	1780	2080
3080	Phillips	15.60	340	619	888	1210	1870	2200
3093	Phillips	5.81	185	344	501	694	1070	1300
3097	Phillips	10.89	273	500	721	990	1530	1810
3100	Phillips	29.13	501	897	1280	1730	2670	3070
3101	Phillips	0.17	21.2	42.8	65.7	95.7	148	198
3103	Phillips	2.50	110	208	308	431	666	826
3105	Phillips	3.22	129	242	356	498	769	946
3107	Phillips	14.86	330	601	863	1180	1820	2140
3109	Phillips	9.48	250	460	665	916	1420	1690
3111	Phillips	15.49	339	616	885	1210	1870	2190
3113	Phillips	16.79	356	646	927	1270	1950	2290
3115	Phillips	3.85	144	269	395	550	850	1040
3118	Phillips	2.29	104	198	293	411	635	789
3119	Phillips	1.57	82.7	158	235	332	513	645
3120	Phillips	11.64	284	520	750	1030	1590	1880

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3236	Phillips	76.16	906	1590	2220	2970	4590	5140
3237	Phillips	76.42	907	1590	2230	2980	4600	5150
3241	Phillips	80.46	937	1640	2300	3070	4740	5290
3246	Phillips	20.38	401	725	1040	1410	2180	2540
3247	Phillips	9.60	252	464	671	923	1430	1700
3251	Phillips	13.22	307	561	807	1100	1700	2010
3256	Phillips	23.14	434	782	1120	1520	2350	2720
3258	Phillips	6.68	202	374	543	751	1160	1400
3259	Phillips	7.97	225	415	602	830	1280	1540
3263	Phillips	6.74	203	376	546	755	1170	1400
3265	Phillips	7.71	220	407	590	815	1260	1510
3344	Phillips	3.86	144	270	396	551	851	1040
3345	Phillips	5.77	184	343	499	692	1070	1290
3347	Phillips	6.94	207	383	556	768	1190	1430
3349	Phillips	7.49	216	400	581	802	1240	1490
3351	Phillips	1.64	84.7	162	241	340	525	659
3353	Phillips	3.25	129	244	358	500	772	950
3375	Phillips	79.79	932	1630	2290	3050	4710	5270
3384	Phillips	12.07	291	531	765	1050	1620	1920
4005	Phillips	3.60	138	259	380	530	818	1000
4006	Phillips	7.05	208	386	561	774	1200	1440
4007	Phillips	999.77	4430	7320	9880	12700	19600	20400
4008	Phillips	997.10	4430	7310	9860	12700	19600	20300
4009	Phillips	78.85	925	1620	2270	3030	4680	5240
4010	Phillips	76.76	910	1590	2230	2990	4610	5160
4011	Phillips	74.36	892	1560	2190	2930	4530	5070

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4012	Phillips	72.95	882	1550	2170	2900	4480	5020
4013	Phillips	65.53	825	1450	2040	2730	4220	4740
4014	Phillips	58.49	769	1360	1910	2560	3960	4460
4015	Phillips	52.53	720	1270	1790	2410	3720	4210
4016	Phillips	51.40	710	1260	1770	2380	3680	4160
4017	Phillips	13.04	305	556	801	1100	1700	2000
4018	Phillips	11.37	280	513	739	1010	1560	1860
4019	Phillips	22.51	427	769	1100	1490	2300	2680
4020	Phillips	20.44	402	727	1040	1410	2180	2540
4021	Phillips	17.10	360	653	937	1280	1980	2310
4022	Phillips	19.05	385	697	997	1360	2100	2450
4023	Phillips	92.65	1020	1780	2490	3320	5130	5710
4024	Phillips	82.87	954	1670	2340	3120	4820	5380
4025	Phillips	79.71	931	1630	2280	3050	4710	5270
4026	Phillips	76.66	909	1590	2230	2980	4610	5160
4116	Phillips	135.83	1290	2240	3110	4120	6370	7000
4117	Phillips	127.88	1250	2160	3000	3980	6150	6780
4118	Phillips	201.55	1650	2830	3910	5150	7960	8650
4119	Phillips	197.60	1630	2800	3860	5090	7860	8560
4120	Phillips	206.74	1680	2870	3970	5230	8080	8770
4121	Phillips	205.15	1670	2860	3950	5200	8030	8730
4122	Phillips	8.69	237	437	633	872	1350	1610
4123	Phillips	11.30	279	511	737	1010	1560	1850
4124	Phillips	30.86	519	928	1320	1780	2750	3170
4125	Phillips	29.76	507	908	1290	1750	2700	3110
4140	Phillips	14.79	329	600	861	1180	1820	2140

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4164	Phillips	4.34	155	289	424	589	910	1110
4165	Phillips	2.11	99	188	279	392	606	754
4221	Phillips	7.86	223	412	597	824	1270	1520
4222	Phillips	2.65	114	216	318	446	689	852
4223	Phillips	5.20	173	322	470	652	1010	1220
4224	Phillips	1098.89	4750	7850	10600	13600	21300	21800
4225	Phillips	7.24	212	392	570	787	1220	1460
4226	Phillips	1091.64	4730	7820	10600	13600	21300	21800
4227	Phillips	987.46	4400	7270	9810	12600	19500	20200
4228	Phillips	986.60	4400	7270	9800	12600	19500	20200
4229	Phillips	1.87	91.9	175	260	366	565	707
4230	Phillips	21.20	411	742	1060	1440	2220	2590
4231	Phillips	2.35	106	201	297	417	644	800
4232	Phillips	6.47	198	367	534	738	1140	1370
4234	Phillips	1.23	71.1	137	204	289	447	566
4235	Phillips	81.58	945	1650	2310	3090	4770	5330
4236	Phillips	82.81	954	1670	2330	3120	4810	5370
4237	Phillips	74.57	894	1570	2200	2940	4540	5080
4238	Phillips	1.08	65.7	127	190	269	416	529
4239	Phillips	75.72	902	1580	2220	2960	4580	5120
4240	Phillips	4.25	153	286	418	582	899	1100
4241	Phillips	70.37	862	1510	2120	2840	4390	4930
4242	Phillips	66.12	830	1460	2050	2740	4240	4760
4243	Phillips	55.26	743	1310	1850	2480	3830	4330
4244	Phillips	52.59	721	1270	1790	2410	3730	4220
4245	Phillips	2.92	121	228	336	470	726	897

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4246	Phillips	3.62	138	260	381	531	820	1010
4247	Phillips	28.48	494	885	1260	1710	2640	3040
4248	Phillips	24.86	454	816	1160	1580	2440	2820
4249	Phillips	10.85	272	499	720	989	1530	1810
4250	Phillips	6.55	199	370	538	743	1150	1380
4251	Phillips	4.29	153	287	420	585	904	1100
4252	Phillips	22.24	424	764	1090	1480	2290	2660
4253	Phillips	21.90	420	757	1080	1470	2270	2640
4254	Phillips	12.69	300	547	788	1080	1670	1970
4255	Phillips	9.20	246	452	654	901	1390	1660
4258	Phillips	209.86	1690	2900	4000	5270	8140	8840
4259	Phillips	209.86	1690	2900	4000	5270	8140	8840
4260	Phillips	208.82	1690	2890	3990	5260	8130	8820
4261	Phillips	1.03	63.7	123	184	262	405	515
4262	Phillips	1.31	73.8	142	212	299	462	584
4263	Phillips	208.74	1690	2890	3990	5250	8110	8810
4264	Phillips	207.42	1680	2880	3970	5240	8100	8780
4265	Phillips	1.16	68.5	132	197	279	432	548
4266	Phillips	203.85	1660	2850	3930	5180	8000	8700
4267	Phillips	202.76	1660	2840	3920	5170	7990	8680
4268	Phillips	197.15	1630	2790	3860	5090	7860	8550
4269	Phillips	189.71	1590	2730	3770	4980	7690	8370
4270	Phillips	6.47	198	367	534	738	1140	1370
4271	Phillips	25.49	461	828	1180	1600	2470	2860
4272	Phillips	2.33	105	200	296	415	641	796
4273	Phillips	19.62	392	709	1010	1380	2130	2490

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4274	Phillips	14.84	330	601	863	1180	1820	2140
4275	Phillips	5.41	177	330	481	667	1030	1250
4276	Phillips	3.02	124	233	343	480	742	914
4277	Phillips	12.63	299	546	786	1080	1670	1970
4279	Phillips	5.92	187	348	507	702	1080	1310
4286	Phillips	1.34	74.8	144	214	303	468	591
4287	Phillips	267.56	1970	3350	4600	6050	9350	10100
4288	Phillips	268.91	1970	3360	4620	6060	9360	10100
4289	Phillips	1.39	76.4	147	219	309	477	603
4290	Phillips	131.26	1270	2190	3050	4040	6240	6880
4291	Phillips	129.86	1260	2180	3030	4020	6210	6840
4336	Phillips	8.43	233	429	622	857	1320	1580
4340	Phillips	1.39	76.5	147	219	309	477	603
4341	Phillips	13.16	307	559	805	1100	1700	2010
4350	Phillips	1.73	87.8	168	249	351	542	679
4351	Phillips	2.64	114	215	317	444	686	850
4352	Phillips	1.58	82.8	159	236	333	514	646
4353	Phillips	3.95	146	274	401	558	862	1060
4354	Phillips	1.52	80.9	155	231	325	503	633
4355	Phillips	1.45	78.7	151	225	317	490	618
4356	Phillips	3.78	142	267	391	545	842	1030
4357	Phillips	7.94	224	414	601	829	1280	1530
4425	Phillips	2.60	113	213	315	441	681	843
4426	Phillips	1.09	66.1	128	191	270	417	531
4439	Phillips	4.07	149	279	408	568	878	1070
4440	Phillips	5.68	183	340	495	686	1060	1280

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4441	Phillips	22.91	431	777	1110	1510	2330	2700
4442	Phillips	1.50	80.2	154	229	323	499	628
4443	Phillips	7.04	208	386	561	774	1200	1440
4444	Phillips	1.16	68.7	132	198	280	433	549
4445	Phillips	1.44	78.1	150	223	315	487	614
4446	Phillips	1.95	94.3	180	266	375	579	723
4447	Phillips	9.78	255	469	678	932	1440	1710
4448	Phillips	3.70	140	263	386	538	831	1020
4474	Phillips	2.24	103	195	288	405	626	778
4475	Phillips	2.19	101	193	285	400	618	769
4485	Phillips	29.04	499	895	1270	1720	2660	3070
4486	Phillips	1208.25	5010	8270	11100	14400	22400	22800
4488	Phillips	985.75	4400	7260	9800	12600	19500	20200
4489	Phillips	985.86	4400	7260	9800	12600	19500	20200
4490	Phillips	2.58	112	212	313	439	678	840
4528	Phillips	994.33	4420	7300	9850	12700	19600	20300
4529	Phillips	996.68	4430	7310	9860	12700	19600	20300
5001	Phillips	107.71	1120	1950	2720	3620	5590	6190
6015	Phillips	82.77	953	1670	2330	3120	4810	5370
6016	Phillips	2.29	104	198	293	411	635	789
6031	Phillips	5.70	183	340	496	687	1060	1280
6036	Phillips	8.35	231	427	618	852	1320	1570
6037	Phillips	33.19	542	969	1380	1860	2870	3300
6038	Phillips	7.16	211	390	566	782	1210	1450
6039	Phillips	16.65	354	643	922	1260	1950	2280
6048	Phillips	8.19	229	422	612	844	1300	1560

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PP001	Phillips	0.00	1.98	4.36	7.09	10.9	16.8	25.3
PP002	Phillips	1.21	70.2	135	202	286	442	559
PP003	Phillips	1.16	68.4	132	197	279	431	547
PP004	Phillips	4.06	148	278	408	568	877	1070
PP005	Phillips	5.55	180	335	488	677	1050	1270
PP006	Phillips	9.50	251	461	666	917	1420	1690
PP007	Phillips	22.38	425	767	1090	1490	2300	2670
PP008	Phillips	35.55	566	1010	1430	1930	2980	3420
PP009	Phillips	1.28	72.8	140	209	295	456	577
PP010	Phillips	0.18	21.7	43.6	67	97.4	150	202
PP011	Phillips	0.58	44.9	88	133	190	294	380
PP012	Phillips	3.07	125	236	347	485	749	922
PP013	Phillips	93.02	1020	1790	2500	3330	5140	5720
PP014	Phillips	7.52	217	401	582	803	1240	1490
PP015	Phillips	0.12	16.6	33.7	52.1	76.2	118	160
PP016	Phillips	0.13	18	36.5	56.3	82.2	127	172
PP017	Phillips	0.70	50.2	98.1	147	210	325	419
PP018	Phillips	0.35	33	65.4	99.3	143	221	291
PP019	Phillips	4.83	165	308	450	626	967	1170
PP020	Phillips	0.87	57.2	111	167	237	366	469
PP021	Phillips	4.08	149	279	408	569	879	1070
PP022	Phillips	0.85	56.4	110	164	234	361	463
PP023	Phillips	2.28	104	197	292	410	633	787
PP024	Phillips	0.57	44	86.3	130	186	288	373
PP025	Phillips	3.28	130	245	360	503	776	955
PP026	Phillips	0.20	23.3	46.8	71.7	104	161	215

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PP027	Phillips	3.58	137	258	378	528	816	1000
PP028	Phillips	1.38	76.2	146	218	308	476	601
PP029	Phillips	0.14	18.7	37.8	58.2	85	131	177
PP030	Phillips	1.00	62.7	121	181	258	398	507
PP031	Phillips	2.17	101	191	283	398	615	765
PP032	Phillips	0.33	31.7	62.9	95.6	138	213	281
PP033	Phillips	0.53	42	82.5	125	179	277	358
PP034	Phillips	18.27	375	680	973	1330	2050	2390
PP035	Phillips	5.73	183	341	497	689	1060	1290
PP036	Phillips	3.06	125	235	346	484	748	921
PP037	Phillips	31.40	524	937	1330	1800	2780	3200
PP038	Phillips	35.29	563	1000	1420	1920	2970	3410
PP039	Phillips	2.30	105	199	293	412	637	790
PP040	Phillips	0.33	31.7	62.9	95.6	138	213	281
PP041	Phillips	40.39	612	1090	1540	2080	3210	3660
PP042	Phillips	0.48	39.8	78.4	119	170	263	342
PP043	Phillips	8.35	231	427	618	852	1320	1570
PP044	Phillips	2.65	114	216	318	445	688	852
PP045	Phillips	1.99	95.6	182	270	379	586	731
PP046	Phillips	0.39	35.2	69.6	106	152	235	307
PP047	Phillips	3.60	138	259	380	530	819	1000
PP048	Phillips	0.73	51.3	100	150	214	331	426
PP049	Phillips	0.33	31.8	63.1	95.9	138	214	281
PP050	Phillips	0.30	29.6	58.9	89.8	130	200	265
PP051	Phillips	1.90	92.8	177	262	369	570	713
PP052	Phillips	0.17	20.8	41.9	64.4	93.8	145	195

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PP053	Phillips	0.41	35.9	70.9	107	154	239	313
PP054	Phillips	0.56	43.6	85.5	129	185	285	370
PP055	Phillips	4.93	167	312	456	633	978	1190
PP056	Phillips	4.49	158	295	432	600	927	1130
PP057	Phillips	0.16	20.2	40.9	62.8	91.5	141	190
2	Valley	17.88	589	1070	1530	2070	3590	3680
3	Valley	544.85	6530	10700	14200	18000	31200	28000
6	Valley	4.00	443	802	1150	1560	2710	2750
7	Valley	5.40	574	1030	1460	1960	3400	3400
8	Valley	9.41	716	1270	1790	2400	4160	4130
10	Valley	0.22	115	221	316	460	797	865
11	Valley	4.95	557	997	1410	1900	3300	3310
12	Valley	5.13	565	1010	1430	1930	3350	3350
13	Valley	0.14	96.2	186	277	390	677	739
14	Valley	4.41	529	948	1350	1820	3160	3170
15	Valley	4.56	538	963	1370	1840	3190	3210
18	Valley	16.73	821	1450	1970	2730	4740	4700
19	Valley	86.31	1140	2000	2720	3760	5220	6460
20	Valley	20.25	873	1540	2170	2890	5010	4970
22	Valley	50.44	1680	2850	3910	5120	8780	8390
23	Valley	3.50	476	857	1220	1650	2860	2890
24	Valley	46.94	1610	2740	3760	4920	8430	8080
25	Valley	38.43	1350	2310	3190	4190	7170	6960
26	Valley	2.86	465	837	1190	1610	2790	2810
27	Valley	35.52	1270	2190	3020	3970	6780	6610
28	Valley	3.20	518	926	1270	1770	3070	3070

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
29	Valley	31.32	1150	1980	2750	3630	6180	6070
30	Valley	34.93	1260	2170	3000	3940	6730	6570
35	Valley	91.83	2140	3600	4920	6410	11000	10400
36	Valley	115.87	2290	3860	5270	6860	11800	11100
37	Valley	24.03	880	1550	2190	2930	5080	5040
38	Valley	117.07	2260	3820	5210	6780	11700	11000
39	Valley	105.05	1480	2560	3550	4700	7980	7920
40	Valley	3.49	157	304	439	644	1120	1240
42	Valley	2.10	286	530	741	1060	1830	1920
44	Valley	0.57	152	289	412	596	1030	1120
46	Valley	95.37	1440	2490	3460	4580	7760	7710
47	Valley	93.83	1430	2470	3430	4540	7690	7650
50	Valley	85.26	1340	2320	3230	4270	7220	7220
51	Valley	2.65	292	542	759	1080	1880	1970
52	Valley	92.47	1410	2440	3390	4480	7590	7560
53	Valley	4.42	369	678	979	1340	2320	2410
54	Valley	69.60	1150	2010	2810	3730	6260	6360
56	Valley	29.92	778	1380	1950	2620	4480	4570
57	Valley	39.65	814	1440	2020	2710	4490	4690
58	Valley	36.99	756	1340	1890	2540	4190	4410
59	Valley	1.15	238	443	623	890	1540	1620
60	Valley	35.97	737	1310	1840	2470	4070	4300
61	Valley	0.96	220	411	600	828	1440	1510
62	Valley	0.47	154	292	431	599	1040	1120
63	Valley	0.49	160	302	445	619	1070	1150
67	Valley	29.18	765	1360	1930	2580	4410	4500

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
68	Valley	19.73	589	1060	1510	2040	3470	3600
69	Valley	9.44	504	910	1300	1770	3050	3130
73	Valley	14.84	645	1160	1590	2220	3850	3890
74	Valley	29.59	811	1440	2040	2750	4770	4790
75	Valley	12.86	471	862	1240	1700	2950	3050
80	Valley	12.20	464	849	1220	1670	2900	3010
81	Valley	1.93	194	368	523	757	1310	1420
85	Valley	5.50	309	576	840	1160	2010	2130
86	Valley	2.87	228	430	631	878	1520	1630
87	Valley	2.62	212	402	593	828	1440	1550
91	Valley	13.66	479	897	1320	1830	3120	3380
93	Valley	4.75	208	388	567	784	1280	1460
94	Valley	23.56	458	825	1180	1600	2510	2860
95	Valley	28.31	518	929	1320	1790	2830	3190
102	Valley	8.74	336	625	911	1260	2190	2310
103	Valley	5.62	314	584	850	1170	2020	2140
104	Valley	14.38	454	832	1200	1640	2840	2960
106	Valley	14.98	465	851	1220	1680	2910	3020
107	Valley	29.22	605	1090	1560	2120	3600	3780
108	Valley	44.21	763	1360	1940	2620	4480	4610
109	Valley	45.82	781	1390	1980	2680	4570	4700
110	Valley	31.16	560	1000	1430	1930	3080	3430
111	Valley	76.99	992	1750	2470	3300	5480	5720
112	Valley	80.86	1000	1770	2490	3330	5540	5770
119	Valley	17.06	481	875	1250	1710	2900	3070
120	Valley	13.36	405	741	1070	1460	2460	2650

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
121	Valley	4.44	287	534	752	1080	1700	1970
129	Valley	124.55	1340	2340	3260	4340	7180	7410
130	Valley	11.14	443	812	1170	1600	2770	2890
131	Valley	135.69	1400	2450	3420	4550	7550	7750
132	Valley	0.37	62.2	125	191	275	477	552
133	Valley	136.07	1420	2460	3430	4560	7590	7780
134	Valley	136.44	1420	2460	3440	4560	7590	7790
136	Valley	124.16	1330	2330	3250	4330	7170	7400
137	Valley	124.02	1330	2330	3250	4330	7170	7400
140	Valley	100.81	1170	2050	2870	3830	6270	6590
141	Valley	22.87	623	1120	1610	2180	3780	3860
142	Valley	123.69	1330	2320	3240	4310	7130	7380
148	Valley	15.21	486	888	1280	1740	3020	3140
149	Valley	2.89	290	538	783	1080	1870	1960
150	Valley	12.30	412	758	1100	1510	2610	2730
153	Valley	137.38	1410	2460	3430	4570	7590	7790
154	Valley	9.66	400	735	1060	1460	2530	2650
156	Valley	16.79	591	1070	1520	2070	3590	3660
158	Valley	15.35	579	1040	1490	2030	3520	3580
159	Valley	1.20	156	299	444	622	1080	1180
160	Valley	14.14	560	1010	1450	1970	3420	3480
165	Valley	0.31	81.6	160	234	346	600	675
166	Valley	1.23	138	267	384	562	975	1070
167	Valley	1.55	157	301	431	628	1090	1190
168	Valley	1.68	164	315	450	656	1140	1240
169	Valley	5.85	313	581	848	1170	2030	2150

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
170	Valley	7.29	346	641	931	1280	2220	2340
171	Valley	7.36	347	643	935	1290	2240	2350
172	Valley	38.02	697	1260	1790	2430	4220	4300
173	Valley	45.39	774	1390	1970	2670	4630	4690
183	Valley	57.28	899	1600	2270	3050	5290	5340
184	Valley	66.37	935	1660	2350	3160	5480	5520
185	Valley	123.65	1290	2260	3170	4230	7340	7260
186	Valley	11.18	414	763	1100	1520	2640	2750
187	Valley	64.55	925	1650	2330	3130	5430	5470
188	Valley	53.37	834	1490	2120	2860	4960	5010
189	Valley	18.97	479	878	1270	1730	3000	3130
190	Valley	47.87	794	1420	2020	2730	4740	4800
191	Valley	28.89	640	1160	1650	2240	3890	3980
192	Valley	7.45	346	640	931	1280	2220	2340
193	Valley	20.42	544	989	1420	1940	3370	3460
194	Valley	27.87	640	1160	1650	2240	3890	3980
196	Valley	15.35	485	886	1280	1740	3020	3130
197	Valley	3.68	235	442	627	905	1570	1690
198	Valley	18.64	532	967	1390	1890	3280	3390
204	Valley	8.09	394	725	1050	1440	2500	2600
205	Valley	143.46	1390	2440	3410	4540	7880	7770
206	Valley	9.67	427	782	1130	1540	2670	2780
207	Valley	126.51	1300	2280	3190	4260	7390	7310
208	Valley	136.24	1360	2380	3330	4440	7700	7600
210	Valley	1368.34	5370	8800	11800	15200	23500	24100
211	Valley	52.86	723	1280	1800	2420	3740	4230

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
212	Valley	1307.74	5230	8590	11500	14800	22900	23500
213	Valley	1360.60	5360	8790	11800	15200	23500	24000
214	Valley	6.88	205	380	553	764	1180	1420
215	Valley	38.34	593	1060	1490	2020	3120	3560
216	Valley	46.62	669	1190	1670	2250	3480	3950
222	Valley	30.60	516	923	1310	1780	2750	3160
223	Valley	1294.16	5200	8540	11500	14700	22700	23400
224	Valley	1263.55	5120	8420	11300	14500	22400	23100
227	Valley	1692.81	6150	10000	13500	17200	26700	27200
228	Valley	1667.40	6090	9960	13400	17100	26500	27000
229	Valley	1293.61	5220	8580	11600	14800	23100	23700
230	Valley	373.78	2420	4080	5590	7300	11300	12000
231	Valley	372.81	2410	4080	5580	7290	11300	12000
232	Valley	21.12	410	741	1060	1440	2220	2590
233	Valley	351.69	2330	3940	5390	7060	10900	11700
1121	Valley	24.69	612	1110	1580	2150	3730	3820
1124	Valley	725.88	3250	5470	7440	9670	15600	15800
1127	Valley	0.52	69	138	203	304	527	608
1316	Valley	3.14	515	921	1310	1760	3050	3050
1317	Valley	30.72	1120	1940	2700	3550	6050	5960
1438	Valley	84.56	1330	2300	3200	4240	7160	7170
1440	Valley	10.44	428	786	1140	1560	2710	2820
2002	Valley	6.52	351	649	941	1290	2240	2350
2003	Valley	19.69	540	983	1410	1920	3330	3440
2004	Valley	19.37	540	982	1410	1920	3330	3430
2006	Valley	5.42	299	557	814	1120	1940	2070

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2009	Valley	8.03	293	548	804	1110	1930	2070
2022	Valley	7.61	384	707	1020	1400	2430	2540
2042	Valley	5.12	317	589	857	1180	2050	2160
2043	Valley	8.83	395	727	1050	1440	2500	2610
2044	Valley	3.24	263	492	720	995	1730	1830
2045	Valley	3.79	278	519	758	1050	1820	1920
2046	Valley	9.14	461	840	1210	1650	2860	2940
2047	Valley	7.60	431	787	1130	1550	2690	2770
2048	Valley	0.12	35.9	73.8	115	168	291	346
2049	Valley	0.20	45.7	92.8	144	209	363	425
2052	Valley	2.51	274	509	742	1020	1770	1870
2055	Valley	4.73	293	547	798	1100	1910	2030
2064	Valley	18.24	500	909	1300	1780	3010	3180
2067	Valley	3.97	241	453	667	927	1610	1730
2071	Valley	3.81	259	484	708	982	1700	1810
2074	Valley	4.76	291	542	790	1100	1890	2010
2075	Valley	2.17	101	192	284	399	616	767
2077	Valley	2.85	123	233	342	478	744	911
2079	Valley	3.92	169	316	463	643	1030	1210
2081	Valley	4.52	198	370	540	749	1220	1390
2083	Valley	33.84	549	980	1390	1880	2900	3330
2086	Valley	6.06	190	353	514	711	1100	1330
2089	Valley	5.02	169	316	461	640	988	1200
2953	Valley	16.76	356	646	926	1260	1950	2290
2955	Valley	11.94	434	813	1190	1650	2800	3060
2959	Valley	2.62	222	419	616	857	1490	1600

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
2961	Valley	6.14	325	603	879	1210	2100	2220
2963	Valley	7.55	359	665	966	1330	2310	2420
2964	Valley	32.44	824	1470	2080	2790	4840	4860
2968	Valley	2.94	324	596	863	1180	2050	2140
2970	Valley	4.02	371	680	981	1340	2320	2410
2972	Valley	10.72	586	1050	1500	2030	3520	3560
2976	Valley	10.17	573	1030	1470	1990	3450	3490
2977	Valley	8.35	529	955	1360	1850	3210	3260
2980	Valley	15.07	468	850	1220	1660	2800	2970
2982	Valley	16.49	507	916	1310	1780	3020	3180
2988	Valley	7.63	438	797	1140	1560	2680	2780
2990	Valley	0.40	145	276	408	568	985	1060
2996	Valley	77.57	1250	2170	3030	4020	6780	6820
3000	Valley	0.45	120	231	332	484	840	920
3004	Valley	27.12	1000	1740	2430	3220	5460	5420
3005	Valley	2.46	436	786	1120	1520	2640	2660
3008	Valley	2.00	366	666	957	1300	2260	2310
3010	Valley	3.04	449	810	1160	1560	2710	2750
3012	Valley	57.30	1800	3040	4170	5440	9340	8900
3014	Valley	51.04	1690	2870	3940	5140	8830	8440
3016	Valley	72.35	2020	3400	4650	6050	10400	9840
3020	Valley	80.47	2100	3550	4840	6300	10900	10300
3022	Valley	3.38	411	747	1070	1460	2530	2580
3024	Valley	2.80	427	773	1110	1500	2600	2640
3026	Valley	10.31	733	1300	1830	2450	4250	4220
3028	Valley	14.23	800	1410	1990	2660	4620	4570

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3030	Valley	16.25	826	1460	2050	2750	4770	4720
3032	Valley	106.00	1850	3150	4190	5700	8390	9430
3034	Valley	15.74	486	888	1280	1750	3040	3140
3036	Valley	20.68	574	1040	1490	2030	3520	3610
3037	Valley	2.70	211	399	589	821	1420	1540
3039	Valley	4.90	288	537	785	1090	1890	2000
3041	Valley	2.55	411	745	1070	1450	2520	2550
3042	Valley	67.93	1980	3340	4570	5950	10200	9680
3044	Valley	61.99	1900	3220	4390	5730	9850	9330
3046	Valley	8.60	473	857	1230	1670	2880	2960
3049	Valley	1.24	218	409	598	828	1440	1520
3050	Valley	1.99	267	495	721	993	1720	1810
3051	Valley	2.76	314	579	840	1150	2000	2080
3053	Valley	5.30	425	774	1110	1520	2640	2700
3055	Valley	6.29	462	839	1200	1640	2850	2900
3057	Valley	7.51	508	918	1310	1780	3090	3140
3060	Valley	8.92	544	981	1400	1890	3280	3340
3061	Valley	12.99	633	1140	1610	2180	3780	3810
3064	Valley	14.92	667	1190	1700	2290	3970	3990
3065	Valley	2.33	217	409	602	837	1450	1560
3069	Valley	7.08	349	647	941	1300	2260	2370
3082	Valley	18.94	546	991	1420	1940	3370	3460
3084	Valley	13.79	797	1410	1980	2650	4600	4560
3266	Valley	27.36	481	864	1230	1670	2580	2970
3269	Valley	1.86	177	337	482	700	1200	1320
3272	Valley	22.40	436	786	1130	1530	2380	2730

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3275	Valley	4.12	184	347	508	708	1150	1330
3279	Valley	6.81	270	503	734	1010	1690	1870
3281	Valley	4.29	271	508	743	1030	1780	1900
3283	Valley	5.32	318	591	860	1180	2050	2170
3284	Valley	6.28	357	659	956	1320	2280	2390
3286	Valley	9.46	428	784	1140	1550	2680	2790
3289	Valley	10.65	437	800	1150	1580	2730	2850
3291	Valley	1.88	234	438	642	888	1540	1640
3292	Valley	2.11	250	466	681	940	1630	1730
3294	Valley	1.59	177	336	498	696	1210	1310
3295	Valley	1.68	184	349	516	721	1250	1350
3296	Valley	2.12	217	410	602	836	1450	1550
3297	Valley	2.41	237	444	651	902	1560	1670
3298	Valley	2.82	260	485	709	980	1700	1800
3299	Valley	3.95	324	598	868	1190	2060	2170
3300	Valley	4.45	343	633	883	1260	2180	2280
3301	Valley	6.45	404	739	1070	1460	2530	2620
3302	Valley	11.94	525	952	1360	1850	3210	3290
3303	Valley	13.39	547	991	1420	1920	3330	3410
3304	Valley	0.74	126	243	363	512	888	978
3308	Valley	1.30	153	293	436	612	1060	1160
3309	Valley	1.02	132	254	380	536	930	1030
3311	Valley	2.06	219	412	605	841	1460	1560
3313	Valley	2.86	252	471	690	955	1660	1760
3315	Valley	4.54	300	559	814	1120	1940	2060
3319	Valley	4.43	295	549	800	1100	1910	2030

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
3320	Valley	6.08	347	640	930	1280	2220	2320
3322	Valley	3.96	236	447	660	920	1600	1720
3323	Valley	5.22	280	526	770	1070	1860	1980
3324	Valley	5.99	303	566	828	1150	2000	2120
3325	Valley	8.35	355	658	958	1320	2290	2410
3326	Valley	9.43	381	704	1020	1410	2450	2560
3327	Valley	7.03	281	527	773	1070	1860	1990
3330	Valley	9.07	310	579	847	1170	2030	2170
3332	Valley	10.27	329	614	896	1240	2150	2290
3333	Valley	11.14	348	648	944	1300	2260	2400
3334	Valley	15.61	422	778	1130	1550	2690	2820
3336	Valley	17.52	456	837	1210	1660	2880	3010
3339	Valley	5.30	293	547	771	1110	1920	2040
3342	Valley	6.78	329	611	889	1230	2130	2250
3366	Valley	4.53	257	485	713	991	1720	1850
3370	Valley	7.75	343	637	928	1280	2220	2350
3371	Valley	5.30	372	684	989	1350	2340	2440
3392	Valley	6.78	319	594	868	1200	2080	2210
3395	Valley	3.61	236	444	652	907	1570	1690
4001	Valley	7.34	385	708	1030	1400	2430	2550
4002	Valley	8.91	421	773	1120	1530	2650	2760
4003	Valley	7.42	321	598	872	1210	2100	2210
4004	Valley	4.80	251	472	694	965	1670	1800
4126	Valley	13.19	464	868	1270	1760	2990	3250
4127	Valley	9.56	412	758	1100	1500	2600	2720
4128	Valley	35.57	731	1290	1830	2450	4040	4280

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4129	Valley	33.47	687	1220	1720	2320	3800	4050
4130	Valley	39.58	814	1440	2020	2700	4480	4680
4131	Valley	37.15	761	1350	1900	2540	4190	4420
4132	Valley	73.23	1190	2080	2900	3850	6460	6540
4133	Valley	70.01	1160	2020	2820	3750	6300	6390
4134	Valley	77.24	1240	2160	3010	4000	6730	6780
4135	Valley	75.37	1230	2130	2970	3940	6630	6690
4136	Valley	79.62	1270	2210	3070	4080	6870	6910
4137	Valley	16.12	499	906	1290	1760	2980	3140
4138	Valley	5.09	418	763	1100	1490	2590	2660
4144	Valley	2.50	284	527	738	1050	1830	1920
4145	Valley	25.79	969	1680	2340	3100	5250	5230
4146	Valley	27.02	1000	1740	2420	3210	5450	5410
4147	Valley	28.64	1050	1830	2540	3360	5710	5650
4148	Valley	30.69	1120	1940	2690	3550	6050	5960
4149	Valley	29.61	1080	1880	2610	3450	5860	5790
4150	Valley	46.40	1600	2720	3740	4890	8390	8040
4151	Valley	38.67	1350	2320	3200	4200	7190	6980
4152	Valley	61.95	1900	3220	4390	5730	9850	9330
4153	Valley	76.49	2050	3460	4730	6160	10600	10000
4154	Valley	82.89	2120	3570	4870	6340	10900	10300
4155	Valley	4.25	522	936	1330	1790	3110	3130
4156	Valley	13.38	792	1400	1970	2640	4580	4530
4157	Valley	10.51	403	743	1080	1480	2570	2690
4158	Valley	15.35	419	772	1120	1540	2670	2800
4159	Valley	11.02	509	924	1320	1800	3120	3200

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4160	Valley	8.97	458	836	1200	1640	2850	2930
4161	Valley	8.05	381	701	1020	1390	2410	2530
4162	Valley	6.11	248	462	676	937	1560	1730
4163	Valley	36.79	578	1030	1460	1970	3040	3480
4202	Valley	29.87	809	1440	2040	2740	4750	4780
4203	Valley	29.62	812	1440	2050	2750	4770	4790
4204	Valley	0.23	40.8	83.6	130	190	330	392
4205	Valley	20.74	406	733	1050	1430	2210	2560
4206	Valley	17.05	360	652	935	1280	1980	2310
4207	Valley	3.69	140	263	385	537	830	1020
4208	Valley	8.23	247	467	690	964	1670	1820
4209	Valley	27.19	591	1070	1530	2070	3500	3690
4210	Valley	20.02	512	930	1340	1820	3090	3260
4211	Valley	5.56	278	525	748	1080	1370	2010
4212	Valley	4.98	236	443	647	895	1510	1660
4213	Valley	7.97	309	572	832	1150	1930	2100
4214	Valley	12.96	396	725	1050	1430	2400	2590
4215	Valley	16.78	520	946	1360	1850	3210	3310
4216	Valley	20.75	598	1080	1550	2100	3640	3730
4217	Valley	3.97	311	577	839	1150	2000	2100
4218	Valley	54.41	879	1570	2220	2990	5190	5240
4219	Valley	50.59	840	1500	2130	2870	4980	5040
4220	Valley	3.81	271	506	740	1020	1770	1890
4334	Valley	3.64	287	555	830	1170	2030	2230
4345	Valley	1.91	263	489	713	982	1700	1790
4346	Valley	2.62	206	391	577	805	1400	1510

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4347	Valley	2.63	205	388	552	799	1390	1500
4348	Valley	4.20	241	454	667	928	1610	1730
4349	Valley	2.94	122	230	338	473	731	901
4409	Valley	1.05	193	364	535	743	1290	1380
4410	Valley	1.04	360	653	934	1260	2190	2220
4411	Valley	1.23	288	530	766	1050	1820	1880
4412	Valley	1.50	346	631	907	1230	2130	2180
4413	Valley	1.30	161	307	456	639	1110	1210
4414	Valley	1.87	220	413	606	841	1460	1560
4415	Valley	2.41	317	584	845	1160	2010	2090
4416	Valley	1.59	243	453	662	913	1580	1670
4417	Valley	2.54	317	585	846	1160	2010	2090
4418	Valley	1.86	288	533	773	1060	1840	1920
4419	Valley	1.84	256	477	670	958	1660	1750
4420	Valley	2.83	296	548	768	1100	1900	1990
4421	Valley	1.12	250	464	651	928	1610	1680
4422	Valley	1.14	207	389	550	790	1370	1460
4423	Valley	1.97	155	297	442	621	1070	1190
4424	Valley	2.00	208	394	580	807	1400	1510
4434	Valley	9.47	370	686	963	1380	2390	2520
4435	Valley	1.73	186	354	522	729	1260	1370
4436	Valley	1.05	135	260	388	546	947	1040
4437	Valley	1.57	178	338	501	700	1210	1320
4470	Valley	1.23	157	300	446	626	1090	1190
4471	Valley	7.73	987	1710	2380	3130	5430	5230
4472	Valley	5.56	719	1270	1720	2370	4120	4040

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
4473	Valley	1.41	300	552	797	1090	1890	1950
4483	Valley	2.08	300	554	802	1100	1910	1990
4484	Valley	3.01	329	606	877	1200	2080	2170
4491	Valley	80.25	2100	3540	4830	6290	10800	10300
4492	Valley	79.33	2090	3520	4800	6260	10800	10200
4493	Valley	1.47	289	532	742	1050	1830	1900
4536	Valley	2.06	279	518	726	1040	1800	1880
4537	Valley	1.48	238	445	626	896	1550	1640
4538	Valley	3.41	365	669	965	1320	2290	2360
4539	Valley	71.35	2010	3390	4640	6040	10400	9840
4540	Valley	73.23	2000	3370	4460	6020	8460	9810
5997	Valley	1.79	180	342	488	709	1230	1330
5998	Valley	1.27	152	292	418	609	1060	1160
5999	Valley	0.52	97.9	191	278	409	710	794
6002	Valley	137.61	1360	2380	3330	4450	7720	7610
6003	Valley	139.66	1370	2400	3360	4470	7760	7660
6004	Valley	4.61	377	692	962	1360	2370	2450
6005	Valley	89.40	1380	2400	3240	4410	4550	7440
6006	Valley	31.81	648	1150	1630	2200	3580	3850
6007	Valley	0.68	197	369	541	747	1300	1370
6008	Valley	32.50	665	1180	1670	2250	3680	3940
6009	Valley	85.41	2130	3600	4910	6390	11000	10400
6010	Valley	85.36	2180	3670	4830	6500	9420	10600
6011	Valley	82.69	2130	3590	4730	6370	9090	10400
6012	Valley	2.67	430	778	1070	1500	2610	2650
6013	Valley	0.42	175	328	464	666	1160	1220

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
6014	Valley	33.79	1200	2060	2770	3770	4090	6300
6028	Valley	124.40	1370	2390	3280	4470	3760	7680
6029	Valley	124.76	1370	2400	3290	4490	3800	7710
6030	Valley	0.36	79.4	157	229	339	588	665
PV001	Valley	0.42	36.6	72.3	110	157	243	318
PV002	Valley	1.28	72.9	140	209	296	457	578
PV003	Valley	3.04	124	234	344	481	744	917
PV004	Valley	1.08	65.5	127	189	268	415	527
PV005	Valley	1.54	81.6	156	232	328	507	637
PV006	Valley	0.39	34.8	69	105	151	233	305
PV007	Valley	8.72	238	438	634	874	1350	1610
PV008	Valley	1.19	69.5	134	200	283	438	555
PV009	Valley	0.26	56.1	113	167	250	434	503
PV010	Valley	0.67	99.8	195	284	418	726	814
PV011	Valley	0.37	88.8	174	263	373	647	726
PV012	Valley	2.44	188	358	529	741	1290	1400
PV013	Valley	12.29	464	849	1230	1670	2900	3010
PV014	Valley	2.42	269	501	730	1010	1750	1840
PV015	Valley	37.41	691	1250	1780	2410	4180	4270
PV016	Valley	0.78	122	236	341	499	865	956
PV017	Valley	1.90	283	523	759	1040	1800	1890
PV018	Valley	0.88	239	444	646	887	1540	1610
PV019	Valley	0.46	180	338	496	686	1190	1260
PV020	Valley	3.34	360	659	951	1300	2260	2330
PV021	Valley	0.17	102	197	283	412	714	779
PV023	Valley	0.39	46.3	94.6	147	214	371	442

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HYDROLOGY NODE DISCHARGE TABLE

NODE_ID	County	Drainage Area (mi ²)	Peak Discharge (cfs) for Annual Exceedance Probability Flows					
			10%	4%	2%	1%	1% Plus	0.2%
PV024	Valley	7.40	233	443	656	918	1590	1730
PV025	Valley	0.49	160	302	446	620	1080	1150
PV026	Valley	7.34	284	533	781	1080	1870	2010

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Appendix B.

Table of Volumes

WATERBODIES VOLUME TABLE												
Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PB001	0.19	82	4	7	10	14	17	20	24	28	133	3.16
PB002	0.29	86.3	8	14	19	25	30	35	41	47	202	3.16
PB003	0.73	86	21	35	47	63	76	89	103	120	520	3.16
PB004	3.42	82.3	72	129	178	247	303	360	425	498	2416	3.16
PB005	1.33	81.2	27	49	68	95	117	140	165	195	854	3.16
PB006	0.67	81.4	14	25	35	49	60	72	84	100	438	3.16
PB007	0.18	85.1	5	9	12	16	19	22	26	30	118	3.16
PB008	0.86	82.1	19	33	46	64	79	94	110	130	581	3.16
PB009	0.58	81.8	12	22	31	43	52	62	73	86	432	3.16
PB010	0.70	81.9	15	27	37	52	64	76	89	105	522	3.16
PB011	0.52	81.7	11	19	27	37	46	55	65	76	388	3.16
PB012	1.07	79.9	19	35	50	71	88	106	125	149	788	3.16
PB013	3.36	81.3	68	125	173	243	298	356	420	495	2165	3.16
PB014	0.10	80	2	3	5	6	8	10	11	14	68	3.16
PB015	4.38	78.9	68	131	186	267	332	400	479	566	2795	3.16
PB016	18.46	79.5	299	573	813	1161	1442	1736	2062	2452	12008	3.16
PB017	5.43	81.5	109	200	278	390	480	573	675	797	3557	3.16
PB018	1.67	81.6	34	63	87	122	149	178	210	248	1111	3.16
PB019	0.36	83.1	8	14	20	27	33	40	47	54	245	3.16
PB020	4.32	80	73	139	196	279	346	416	495	586	2976	3.16
PB021	4.88	80.2	83	158	223	317	393	472	562	664	3374	3.16
PB022	3.65	82.3	77	138	190	264	323	384	454	532	2579	3.16
PB023	27.78	80.8	476	895	1257	1781	2202	2639	3134	3705	19535	3.16

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WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PB024	2.00	80	34	64	90	128	159	191	227	268	1418	3.16
PB025	42.65	80.7	685	1298	1831	2603	3225	3873	4619	5453	30167	3.16
PB026	42.29	80.6	673	1278	1805	2568	3184	3825	4563	5389	29912	3.16
PB027	0.33	67.7	1	4	6	10	14	18	22	28	231	3.16
PB028	17.09	80.6	289	542	762	1079	1334	1600	1906	2248	12082	3.16
PB029	9.40	81.4	173	319	446	628	773	924	1098	1291	6468	3.16
PB030	1.86	67.9	8	23	38	62	82	105	131	163	1309	3.16
PB031	1.79	80.3	31	59	83	117	145	174	207	244	1266	3.16
PH001	24.83	80.8	431	806	1131	1599	1975	2367	2810	3320	14079	3.16
PH002	6.26	80.3	112	210	295	417	516	618	734	868	3529	3.16
PH003	0.40	82.2	8	15	21	29	35	42	49	58	237	3.16
PH004	3.74	80.4	67	125	175	247	305	365	434	511	2260	3.16
PH005	0.28	82.7	6	11	15	21	25	30	35	41	167	3.16
PH006	1.69	82.8	36	65	89	124	151	180	212	248	979	3.16
PH007	1.30	79.7	21	40	57	82	101	122	145	172	714	3.16
PH008	0.24	78.5	3	7	10	14	18	21	25	30	132	3.16
PH009	0.50	86	14	24	32	43	52	61	71	82	285	3.16
PH010	1.33	83.3	30	53	72	100	122	144	170	198	752	3.16
PH011	3.77	82.3	78	141	194	270	331	394	466	545	2161	3.16
PH012	1.01	81.9	20	37	51	71	87	104	123	144	593	3.16
PH013	0.62	79.8	10	20	28	39	49	58	70	82	365	3.16
PH014	3.03	80.2	52	97	137	195	241	290	345	407	1823	3.16
PH015	20.50	77	230	480	706	1041	1316	1606	1946	2324	12507	3.16
PH016	51.03	79	671	1333	1921	2783	3485	4220	5077	6026	31910	3.16
PH017	6.02	80.6	105	197	276	390	483	578	689	812	3897	3.16
PH018	1.35	80.7	24	45	63	89	110	132	157	185	890	3.16
PH019	3.06	80.7	55	103	144	203	251	300	357	420	2024	3.16
PH020	2.67	81.5	52	95	132	184	226	270	321	376	1758	3.16
PH021	6.87	80.5	126	236	331	468	577	691	818	968	3911	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH022	2.75	80.3	49	92	129	183	226	270	321	379	1818	3.16
PH023	7.49	80.4	132	248	347	491	607	727	864	1020	4899	3.16
PH024	0.88	81.6	18	32	44	62	76	91	107	126	584	3.16
PH025	3.23	78.9	50	96	137	197	245	295	353	418	1918	3.16
PH026	36.59	80.5	618	1167	1643	2332	2886	3463	4108	4869	22018	3.16
PH027	48.35	80.4	794	1506	2126	3022	3745	4498	5342	6334	29522	3.16
PH028	75.52	80.5	1214	2307	3260	4639	5752	6911	8214	9737	46475	3.16
PH029	79.10	80.5	1267	2409	3404	4844	6006	7216	8579	10169	48820	3.16
PH030	23.17	80.8	406	759	1065	1506	1860	2228	2643	3124	14725	3.16
PH031	2.20	81.1	43	79	111	155	191	228	269	318	1392	3.16
PH032	0.47	84.9	12	21	28	38	46	54	64	74	292	3.16
PH033	3.45	81.5	69	124	172	240	294	350	416	487	2155	3.16
PH034	2.23	81.6	43	79	110	154	190	227	269	316	1451	3.16
PH035	20.17	81.3	351	655	918	1297	1601	1918	2281	2686	13088	3.16
PH036	1.31	81.4	25	46	64	89	110	131	156	183	846	3.16
PH037	0.21	80.6	4	7	10	14	17	20	24	28	134	3.16
PH038	3.00	82	60	109	152	212	260	309	366	430	1946	3.16
PH039	3.75	80.8	67	126	176	249	307	368	438	516	2440	3.16
PH040	5.49	81.5	105	192	267	375	461	550	653	767	3494	3.16
PH041	0.34	81.7	7	12	17	23	29	34	41	48	218	3.16
PH042	0.36	77.6	5	10	14	20	26	31	37	45	234	3.16
PH043	0.51	80.8	9	17	24	34	42	50	59	70	359	3.16
PH044	0.42	81.9	9	16	22	30	37	44	52	61	305	3.16
PH045	8.95	81.3	158	302	427	607	752	903	1069	1268	4909	3.16
PH046	34.84	81	615	1167	1646	2335	2890	3465	4088	4864	19101	3.16
PH047	15.27	81.1	282	528	741	1047	1292	1547	1826	2164	8391	3.16
PH048	22.28	80	413	761	1061	1493	1841	2202	2600	3082	15618	3.16
PH049	0.45	75.6	5	11	16	24	31	37	45	54	306	3.16
PH050	15.70	81.3	294	542	754	1059	1304	1557	1844	2173	9998	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH051	19.87	80.8	355	662	927	1310	1617	1936	2294	2713	12689	3.16
PH052	3066.86	78.5	35265	71939	104859	153459	193225	235045	281178	338217	#####	3.16
PH053	0.35	82.4	8	14	19	26	32	38	45	52	233	3.16
PH054	3.29	80.8	62	114	159	223	274	328	389	458	2230	3.16
PH055	54.25	76.7	808	1546	2198	3153	3929	4744	5639	6748	41681	3.16
PH056	2.82	79.5	50	94	132	187	231	277	329	390	1948	3.16
PH057	0.63	84.9	17	29	39	53	64	75	88	102	426	3.16
PH058	19.21	80.6	346	645	904	1276	1576	1887	2233	2644	11747	3.16
PH059	0.80	81.1	16	30	41	58	71	85	100	118	481	3.16
PH060	16.48	80.7	332	601	831	1160	1423	1697	1997	2360	11580	3.16
PH061	27.06	77.3	499	912	1271	1791	2211	2649	3115	3721	23008	3.16
PH062	15.54	80.3	277	523	735	1042	1288	1545	1825	2168	10200	3.16
PH063	29.75	80.8	516	963	1349	1907	2356	2822	3351	3958	17746	3.16
PH064	9.20	81	224	391	532	732	892	1057	1230	1454	5702	3.16
PH065	10.53	80.9	251	440	600	828	1010	1197	1394	1651	6505	3.16
PH066	13.98	80.9	322	570	781	1081	1321	1568	1828	2167	8558	3.16
PH067	74.52	80.1	1743	3032	4125	5682	6926	8213	9532	11329	49804	3.16
PH068	9.60	80.8	193	357	498	700	862	1029	1208	1436	5506	3.16
PH069	16.67	80.4	284	534	751	1064	1316	1579	1877	2218	9464	3.16
PH070	15.54	80.8	273	510	715	1009	1247	1493	1774	2093	9000	3.16
PH071	18.50	80.7	319	598	839	1187	1467	1759	2091	2468	10705	3.16
PH072	10.35	80.7	186	347	486	687	849	1017	1206	1424	5886	3.16
PH073	64.66	80.6	1038	1972	2785	3963	4912	5901	7022	8313	37481	3.16
PH074	65.01	80.6	1043	1982	2799	3983	4937	5932	7058	8356	37699	3.16
PH075	1.50	81	29	54	75	105	129	154	182	215	850	3.16
PH076	0.31	78.3	5	9	13	19	23	28	34	40	188	3.16
PH077	30.03	78.7	402	797	1148	1662	2080	2519	3028	3596	17834	3.16
PH078	27.66	78	345	697	1012	1477	1856	2254	2718	3235	16317	3.16
PH079	30.96	78.8	418	827	1190	1721	2153	2606	3132	3718	18392	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH080	70.38	80.6	1124	2138	3020	4298	5329	6403	7620	9022	40978	3.16
PH081	3.52	81.4	68	125	173	242	297	355	421	494	2071	3.16
PH082	4.72	82	95	173	238	333	408	486	575	674	2734	3.16
PH083	6.09	81.8	119	217	301	421	517	616	731	857	3546	3.16
PH084	10.55	81.7	200	365	508	711	875	1044	1239	1454	6181	3.16
PH085	13.59	81.4	247	456	635	894	1101	1316	1564	1838	8043	3.16
PH086	29.63	81	493	927	1303	1846	2283	2738	3263	3845	17918	3.16
PH087	20.88	81	354	663	931	1318	1629	1953	2327	2740	12617	3.16
PH088	20.06	81	341	638	896	1269	1568	1879	2239	2637	12112	3.16
PH089	11.27	81.2	201	374	523	737	909	1087	1293	1521	6698	3.16
PH090	2.98	80.7	53	99	139	197	243	291	346	407	1775	3.16
PH091	4.43	80.8	79	148	207	292	361	432	515	605	2772	3.16
PH092	1.81	81.2	34	63	88	123	152	181	215	253	1195	3.16
PH093	6.95	80.6	120	225	317	449	555	665	792	934	4551	3.16
PH094	31.17	80.9	513	966	1360	1929	2387	2864	3415	4025	18885	3.16
PH095	65.23	79.6	899	1763	2526	3641	4546	5492	6593	7813	40988	3.16
PH096	63.54	79.5	868	1707	2448	3531	4410	5331	6402	7589	39911	3.16
PH097	46.37	80.7	856	1618	2276	3224	3985	4775	5601	6695	26453	3.16
PH098	46.72	80.7	863	1630	2293	3248	4015	4811	5643	6745	26650	3.16
PH099	49.37	80.7	913	1724	2424	3432	4242	5083	5961	7124	28100	3.16
PH100	59.06	80.8	1088	2053	2888	4090	5054	6056	7103	8488	33442	3.16
PH101	104.28	80.6	2036	3756	5235	7359	9062	10829	12654	15117	60342	3.16
PH102	116.73	80.6	2245	4157	5804	8170	10068	12038	14074	16820	67100	3.16
PH103	131.10	80.6	2490	4623	6460	9102	11222	13423	15701	18766	74971	3.16
PH104	143.59	80.6	2693	5003	6997	9863	12164	14553	17040	20358	81862	3.16
PH105	196.45	80.7	3500	6574	9235	13069	16151	19354	22721	27142	110471	3.16
PH106	201.76	80.7	3584	6733	9459	13387	16545	19828	23283	27809	113410	3.16
PH107	203.62	80.7	3613	6788	9536	13497	16681	19991	23476	28038	114441	3.16
PH108	280.06	80	4474	8399	11816	16768	20767	24937	29584	35120	181361	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH109	3.10	80.7	59	110	154	216	267	319	377	446	1756	3.16
PH110	3.75	80.8	72	134	187	263	324	387	457	540	2125	3.16
PH111	0.16	82.1	4	6	9	12	15	18	21	25	95	3.16
PH112	1.20	81.2	24	44	61	85	105	125	148	174	765	3.16
PH113	29.51	80.6	494	932	1312	1860	2302	2762	3285	3883	18619	3.16
PH114	4.50	81.2	87	158	220	308	378	451	536	629	2708	3.16
PH115	4.77	81.1	90	166	230	323	398	475	564	662	2872	3.16
PH116	5.84	80.7	106	196	273	385	475	569	676	795	3545	3.16
PH117	47.25	80	712	1364	1935	2765	3436	4137	4949	5850	28989	3.16
PH118	45.19	80.1	689	1317	1866	2663	3308	3980	4760	5623	27682	3.16
PH119	27.85	80.2	439	835	1180	1680	2084	2506	2994	3534	17000	3.16
PH120	10.06	80.7	175	327	458	648	800	958	1141	1343	6022	3.16
PH121	6.30	80.8	114	211	294	415	512	612	729	857	3733	3.16
PH122	89.32	79.8	1236	2419	3461	4983	6218	7509	9010	10674	56349	3.16
PH123	6.24	76.9	76	156	228	335	422	514	621	741	4049	3.16
PH124	59.56	80.9	951	1797	2534	3599	4458	5353	6388	7533	36043	3.16
PH125	60.97	80.9	972	1838	2591	3681	4560	5475	6533	7705	36935	3.16
PH126	48.52	80	730	1399	1985	2836	3525	4244	5078	6002	29798	3.16
PH127	6.54	78.8	99	191	273	391	487	587	704	833	4445	3.16
PH128	10.36	80.8	185	343	479	674	831	995	1184	1392	6718	3.16
PH129	5.97	80.9	111	204	284	399	491	587	698	820	3866	3.16
PH130	14.50	81.1	261	482	672	945	1164	1392	1655	1945	9114	3.16
PH131	13.31	81.2	243	447	622	874	1077	1287	1529	1797	8341	3.16
PH132	12.62	81.2	231	425	592	831	1023	1223	1453	1707	7901	3.16
PH133	8.06	81.2	151	277	385	540	664	793	942	1106	5052	3.16
PH134	66.76	81.1	908	1875	2732	3982	4994	6051	7212	8629	37929	3.16
PH135	73.83	81.1	999	2064	3009	4387	5502	6667	7947	9510	41775	3.16
PH136	11.85	81.1	210	402	568	808	1000	1200	1418	1685	6537	3.16
PH137	11.94	81.1	212	405	572	813	1007	1209	1428	1697	6582	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH138	18.98	81.1	337	643	909	1291	1598	1917	2263	2692	10421	3.16
PH139	29.74	80.9	519	990	1400	1990	2465	2958	3492	4158	16298	3.16
PH140	0.52	79.4	9	17	24	35	43	51	61	72	297	3.16
PH141	0.53	81.2	11	20	28	39	47	56	66	78	302	3.16
PH142	670.73	80.1	10825	20370	28680	40714	50428	60554	71511	85267	411052	3.16
PH143	676.78	80.1	10908	20530	28909	41042	50836	61046	72098	85965	414678	3.16
PH144	73.88	80.4	1215	2308	3259	4634	5743	6898	8176	9713	41254	3.16
PH145	811.37	80.1	12673	24030	33942	48316	59931	72046	85208	101635	490503	3.16
PH146	15.16	80.8	278	519	728	1027	1268	1518	1794	2125	8637	3.16
PH147	55.13	80.8	957	1796	2523	3571	4414	5291	6259	7423	30481	3.16
PH148	846.12	80.1	13145	24944	35245	50187	62262	74859	88564	105630	511875	3.16
PH149	851.00	80.1	13213	25074	35430	50453	62593	75258	89039	106196	514919	3.16
PH150	6.65	81.1	133	244	339	474	583	695	819	968	4151	3.16
PH151	7.34	81.1	147	268	373	522	641	765	902	1065	4588	3.16
PH152	932.49	80.1	14305	27206	38478	54839	68066	81868	96920	115592	565249	3.16
PH153	0.92	80.6	19	35	48	67	82	98	116	137	591	3.16
PH154	28.45	80.9	520	964	1347	1898	2341	2801	3310	3917	18023	3.16
PH155	974.02	80.1	14860	28291	40032	57077	70859	85241	100940	120389	591575	3.16
PH156	5.63	81.1	118	215	297	415	509	606	713	842	3722	3.16
PH157	6.65	81.1	139	253	350	488	599	714	839	991	4411	3.16
PH158	15.97	80.2	282	533	750	1064	1316	1579	1867	2218	10483	3.16
PH159	1.48	84.2	41	70	94	128	155	182	211	247	958	3.16
PH160	4.52	86	145	240	317	424	508	594	686	798	2921	3.16
PH161	2.35	81	50	90	125	175	214	256	300	355	1521	3.16
PH162	27.33	77.4	507	926	1289	1815	2240	2683	3154	3767	23171	3.16
PH163	19.77	78.1	374	682	947	1331	1640	1962	2309	2748	15544	3.16
PH164	77.95	71.8	1208	2235	3143	4479	5573	6727	7928	9585	84077	3.16
PH165	0.76	81	15	28	38	54	66	79	94	110	500	3.16
PH166	13.58	78.8	248	459	642	907	1121	1343	1585	1886	9803	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PH167	0.23	86.6	7	12	16	21	25	30	34	40	146	3.16
PH168	17.55	81.2	324	598	834	1173	1445	1727	2046	2412	11188	3.16
PH169	8.71	80.7	156	289	404	569	701	839	998	1174	5578	3.16
PH170	1.99	80.3	41	75	104	145	178	213	250	296	1673	3.16
PH171	50.80	76.4	752	1440	2049	2940	3667	4429	5264	6304	39278	3.16
PP001	0.00	79.8	0	0	0	0	0	0	0	1	2	3.16
PP002	1.21	79.2	19	37	53	76	94	114	136	161	769	3.16
PP003	1.16	79.7	19	37	52	75	93	112	133	158	751	3.16
PP004	4.06	81.8	81	148	205	287	353	421	498	585	2735	3.16
PP005	5.55	79.3	88	169	241	344	429	516	616	731	3711	3.16
PP006	9.50	80.1	158	302	427	608	754	906	1078	1276	6306	3.16
PP007	22.38	80.6	373	710	1002	1424	1765	2119	2518	2982	14798	3.16
PP008	35.55	84.1	811	1443	1976	2730	3328	3943	4610	5422	23379	3.16
PP009	1.28	81.6	26	46	63	88	108	128	152	178	929	3.16
PP010	0.18	80.7	3	6	8	12	15	17	21	24	131	3.16
PP011	0.58	81.7	12	21	29	40	49	59	70	82	430	3.16
PP012	3.07	79.2	50	96	137	197	245	295	351	417	2089	3.16
PP013	93.02	81.5	1599	3013	4237	5999	7415	8886	10513	12460	64900	3.16
PP014	7.52	86.9	235	399	534	721	868	1017	1170	1372	4858	3.16
PP015	0.12	83.8	3	5	6	9	11	13	15	17	71	3.16
PP016	0.13	81.4	3	5	6	9	11	13	15	18	81	3.16
PP017	0.70	81.2	13	24	33	46	56	67	80	93	488	3.16
PP018	0.35	81.1	7	12	16	23	28	34	40	47	253	3.16
PP019	4.83	81	89	162	225	316	389	464	554	648	3243	3.16
PP020	0.87	81.6	17	30	41	57	70	83	99	115	538	3.16
PP021	4.08	82	82	144	197	273	333	396	473	548	2534	3.16
PP022	0.85	83.8	20	34	45	62	75	88	105	121	527	3.16
PP023	2.28	82.3	47	83	113	155	189	225	268	310	1404	3.16
PP024	0.57	81.4	11	19	27	37	45	54	64	75	345	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PP025	3.28	80.8	59	107	149	208	256	306	367	427	2085	3.16
PP026	0.20	80.7	4	7	9	13	16	19	22	26	144	3.16
PP027	3.58	81.8	71	125	171	238	291	345	413	478	2222	3.16
PP028	1.38	81.7	27	48	66	91	112	133	159	184	854	3.16
PP029	0.14	81.5	3	5	7	9	11	14	16	19	87	3.16
PP030	1.00	81.2	19	34	47	65	80	95	114	132	618	3.16
PP031	2.17	78.2	32	64	93	134	168	203	242	289	1660	3.16
PP032	0.33	83.8	8	13	18	24	29	35	41	48	238	3.16
PP033	0.53	79.8	9	16	22	32	39	47	57	66	377	3.16
PP034	18.27	80.8	304	558	777	1094	1349	1614	1938	2261	11788	3.16
PP035	5.73	80.2	96	176	245	345	426	510	614	716	3605	3.16
PP036	3.06	80	51	94	131	184	228	273	328	382	1899	3.16
PP037	31.40	79.6	492	937	1327	1892	2349	2826	3371	3993	21566	3.16
PP038	35.29	80	566	1069	1507	2143	2656	3191	3805	4497	24126	3.16
PP039	2.30	82	46	81	111	154	188	223	267	309	1579	3.16
PP040	0.33	83.6	8	15	20	28	34	40	47	56	208	3.16
PP041	40.39	82.4	794	1438	1988	2773	3400	4050	4782	5621	28305	3.16
PP042	0.48	81.9	10	17	24	33	40	48	57	66	326	3.16
PP043	8.35	81.7	159	286	395	551	676	806	960	1120	5528	3.16
PP044	2.65	81.3	50	90	124	173	213	254	303	354	1768	3.16
PP045	1.99	81.2	37	67	93	130	159	190	227	265	1361	3.16
PP046	0.39	80.1	7	12	17	24	30	36	43	50	284	3.16
PP047	3.60	80.4	62	114	159	223	275	329	395	461	2374	3.16
PP048	0.73	79.9	12	22	31	44	54	65	78	91	442	3.16
PP049	0.33	81.7	7	12	16	22	27	32	38	44	209	3.16
PP050	0.30	80.2	5	9	13	18	22	27	32	38	187	3.16
PP051	1.90	82	38	67	92	127	155	184	220	255	1179	3.16
PP052	0.17	79.3	3	5	7	10	12	15	18	20	106	3.16
PP053	0.41	80	7	12	17	25	30	36	44	51	255	3.16

Milk River Watershed Hydrologic Analysis: Volume 1

WATERBODIES VOLUME TABLE

Node ID	Drainage Area (mi ²)	Curve Number	Volume (ac-ft) for Annual Exceedance Probabilities								Mean Annual Volume (ac-ft)	Mean Annual Evaporation (ft)
			50%	20%	10%	4%	2%	1%	1% Plus	0.2%		
PP054	0.56	81.3	10	19	26	36	44	52	63	73	347	3.16
PP055	4.93	80.9	89	160	221	309	380	454	544	632	3080	3.16
PP056	4.49	79.7	72	134	188	265	328	393	474	553	2762	3.16
PP057	0.16	80.3	3	5	7	10	12	15	18	21	108	3.16
PV001	0.42	82.1	10	19	27	37	46	55	63	75	296	3.16
PV002	1.28	72.8	14	32	49	75	96	119	140	175	924	3.16
PV003	3.04	75.5	43	93	137	203	257	314	368	453	2170	3.16
PV004	1.08	71.1	10	24	37	58	75	93	111	139	755	3.16
PV005	1.54	80.5	35	66	93	131	162	194	223	270	1099	3.16
PV006	0.39	81	9	17	24	34	42	50	57	69	285	3.16
PV007	8.72	82.8	226	411	567	788	963	1143	1313	1574	6056	3.16
PV008	1.19	78.9	23	46	65	94	116	140	162	198	893	3.16
PV009	0.26	81	6	12	17	23	29	34	39	47	191	3.16
PV010	0.67	82	18	32	44	62	75	89	103	123	482	3.16
PV011	0.37	81.8	10	18	24	34	41	49	57	68	266	3.16
PV012	2.44	80.9	59	110	153	215	264	314	361	436	1751	3.16
PV013	12.29	74.8	176	371	547	807	1019	1243	1453	1793	9155	3.16
PV014	2.42	81.7	65	116	159	220	268	318	366	438	1734	3.16
PV015	37.41	82	779	1469	2061	2905	3579	4276	4965	5959	27411	3.16
PV016	0.78	81.2	21	37	51	71	87	103	119	143	538	3.16
PV017	1.90	72.5	24	52	78	118	150	184	216	269	1291	3.16
PV018	0.88	79.4	20	38	53	75	92	110	126	153	585	3.16
PV019	0.46	82.6	14	24	33	45	55	65	74	88	297	3.16
PV020	3.34	78.1	70	134	189	269	334	400	463	563	2330	3.16
PV021	0.17	84.5	6	10	13	18	21	25	29	34	107	3.16
PV023	0.39	80.1	9	17	23	33	41	49	56	68	275	3.16
PV024	7.40	77.9	143	279	398	570	709	853	989	1204	5101	3.16
PV025	0.49	73.5	7	14	21	32	40	49	58	71	357	3.16
PV026	7.34	74.7	109	227	334	491	619	754	882	1086	4698	3.16